Caesia alpina Alpine Grass-lily

1972 Jan 30th Flowering at Hewitt Plains. Very prostrate plant with few flowers and characteristic seed capsule. Plants 1½" high. Leaves 1½" long very narrow, grass-like & rather limp.

Callianthe

Caesia (Vittata) (Blue)

1966	Nov 27th	Flowering on Clark's Rd.
1967	Jan 1st	Still flowering " "
1968	Oct 27th	Flowering Flynn Railway line.
1969	Oct 19th	" at Clarke's Road.
1971	Nov 12	" " Flynn.
1979	Nov 28th	" Flynn Railway Line.
1976	Nov 10th.	Recorded with Dr. Parsons T17
1988	Nov.	Flowering Dawson Railway Station (Photographed)
1994	Oct 30	" " " "
1995	Dec 19th	" Railway line Reserve, Tigon
1996	Sept 5th	" roadside reserve, Tramway Rd, Churchill.
	Dec 4th	" Railway Reservoir Conservation Reserve, Traralgon.
2001	Nov 3	" Newborough Bush
	Dec 5th	" Bob Johnson's " near Sandy Ck, Newborough

Caesia Parviflora

1966 Nov 20th Flowering on Clark's Rd.
1967 Jan 14th " in swamp area opp Waterlily pond
Yallourn Nth
Nov 4th Flowering Wolfe's swamp - slightly blue.
25th " Anderson's Track.
1968 Jan 28th " Wolfe's swamp.
Mch 24th " in wildflower bed.
Nov 10th " along Clarke's Rd
1969 Jan 15th " Anderson's Track
Feb 23rd " Calligree Rd.
1970 Jan 17th " Senini's Track.
1969 Oct. 18th " Rosedale.
1970 Mch 7th " on heathlands near Walkerville.
Oct 11th " at Heyfield.
Nov 23 " at Briagalong
1971 Nov 12 " at Flynn + Reid's Corner
13th " " Cowwarr
1983 Nov 24 Recorded with Dr. Parsons ½ mile Creek. X19.
1994 Nov 26 " on RPM Block Stradbroke Sth. Gipp. Hway.
1995 Oct 28 Flowering on Wonthaggi Heathlands
2000 Dec 3rd " " Sweetwater Ck. Reserve

*

Cakile maritima — Two horned Sea Rocket

1970. Mch 7th — Flowering along beach at Waratah Bay. Small mauvish flower, leaves rather succulent, and toothed. Degree of teeth very varied. Seed pod in two sections. These sections main means of identification. However section in this plant tapering from wide to narrow, with two horns at widest part.

1983 Sept. — Recorded with Dr. Parsons for McGaurans Beach X 19.

1993 Feb 26" — Flowering on beach at Red Bluff at Corner Inlet.

AUSTRALIAN ORCHID FOUNDATION

POLLINATORS OF THREATENED SEXUALLY DECEPTIVE SPIDER ORCHIDS (*CALADENIA* SUBGENUS *CALONEMA*) IN SOUTH WESTERN VICTORIA

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SUMMARY

• The pollinators of 13 species of sexually deceptive Spider Orchids, *Caladenia*, including five threatened species, were investigated in south western Victoria over 16 days in October, 2006.
• Thirty two field choice tests were conducted involving 326 three minute exposures of flowers.
• Male thynnine wasps were attracted to 11 *Caladenia* species and samples collected.
• Seven of the attracted wasps were confirmed as pollinators by observation of mating behaviour on the labellum, removal of pollinia from the anthers or arrival at flowers with pollinia from another flower.
• *Caladenia parva* and *C. villosissima* both attracted *Lophocheilus anilitatus* as their confirmed pollinator and are therefore the same biological species, *C. parva*.
• Similarly, *Caladenia reticulata, C. calcicola* and *C. australis* were all highly attractive to, and pollinated by, *Phymatothynnus* nr. *nitidus*, and consequently belong to the same biological species, *C. reticulata*.
• Thynnine wasps attracted to *Caladenia venusta*, *C. formosa*, *C. richardsiorum* and *C. hastata* were not confirmed as pollinators, due to relatively weak interactions with the flowers, but are expected to meet pollinator criteria with further observations.
• *Caladenia versicolor* is considered to be food deceptive rather than sexually deceptive because it failed to attract thynnine wasps, has pinkish mauve labellum markings, a sweet odour, and attracted a domestic honeybee.
• Data gained on the distribution and abundance of wasps attracted to threatened *Caladenia* species is used to recommend strategies for either enhancing habitat for pollinators at orchid sites (*C. formosa*), or to recommend sites with high pollinator populations for relocation or reestablishment (*C. formosa, C. calcicola, C. hastata*).

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INTRODUCTION

The Australian terrestrial orchid genus *Caladenia* subgenus *Calonema*, commonly known as the Spider Orchids, is mainly pollinated by sexually deceived male Thynnine wasps (Stoutamire 1983; Peakall 1990; Bower 1992, 2001; Peakall & Beattie 1996; Bates 1996). A key feature of the thynnine pollination syndrome is the one to one relationship of each orchid species with a specific thynnine pollinator species within the orchid's normal geographical distribution and habitats (Stoutamire 1983; Bower 1996, 2006; Bower and Brown 1997). Pollinator specificity is based on mimicry by the orchid of the sex pheromone odours emitted by pollinator females to attract males (Schiestl *et al.* 2003). Pollination occurs when male wasps attempt to mate and fly off with the orchid labellum that, to a greater or lesser degree, mimics the shape, size and colour of the female, as well as being a source of the odour mimic (allomone).

Pollinator specificity can be used to distinguish morphologically similar cryptic or sibling orchid species by their consistent attraction of different wasp species (Paulus & Gack 1990; Bower 1996, 2006). Various field choice experimental designs are used to test whether orchid samples from different populations attract the same or different wasps for pollination (Bower 1996, 2006; Bower & Brown 1997). These techniques have identified new cryptic pollinator-specific species of *Chiloglottis* (Bower 2006) and *Caladenia* (Bower & Jones, unpublished).

Implications of Sexual Deception for Orchid Conservation

The last twenty years has seen a growing understanding of the role of pollinator population declines as a threatening process for rare plant species (Bond 1994, Buchmann and Nabhan 1996, Kearns and Inouye 1997, Kearns *et al.* 1998). However, this realisation has been slow to translate into studies to determine the pollinators of threatened species, investigate their ecological requirements and incorporate the results into conservation plans for rare plants.

Dressler (1981) appears to be among the first to have identified the importance of pollinators for orchid conservation when he observed that 'a small reserve may be inadequate to maintain.....some of the pollinating insects without which the orchid species cannot survive' (p. 120). Leigh *et al.* (1984) first noted the importance of specific thynnine wasp pollinators for the conservation of sexually deceptive *Drakaea* species. They concluded 'the size of the reserve necessary to protect the orchid species must be large enough to protect the other plants on which the (pollinator) wasp feeds'.

A number of characteristics determine the vulnerability of a plant species to loss of a pollinator. Bond (1994) and Kearns and Inouye (1997) list these as the plant being dioecious and self incompatible (i.e. obligatorily outcrossing), having only a single pollinator, and propagating only by seed. Although being

self-compatible and not dioecious, thynnine wasp pollinated *Caladenia* species increase only by seed and have strict one to one relationships with a single pollinator. These characteristics, in combination with the requirement of specific fungi for seed germination, may largely explain why the genus *Caladenia* has such a high proportion of threatened species. Some 47 out of 170 described species (27.6%) are listed as threatened under the Commonwealth *Environmental Protection and Biodiversity Conservation Act*. By contrast, out of 24 described species of Bird Orchids (genus *Chiloglottis*) none are listed as threatened, despite each having a single specific thynnine wasp pollinator. The key difference appears to be that *Chiloglottis* species reproduce vegetatively, as well as by seed, and this may provide a buffer against loss of pollinators (Bond 1994).

The above considerations suggest that knowledge of the identity of pollinators, and their habitat requirements, distribution and abundance, may be important for developing successful recovery strategies for threatened sexually deceptive orchid species. This information can be used to determine if habitat enhancement to increase pollinator populations may be feasible at natural sites of threatened orchids. Alternatively, it can be used to locate sites with large, viable pollinator populations to which the threatened orchid species can be relocated from development sites, or reestablished from breeding programs.

This report presents the results of the first season of a three year investigation of the pollinators of a range of rare and threatened *Caladenia* species in south eastern Australia. The specific aims of the study in 2006 were:

- To collect and identify the pollinators of as many threatened and other *Caladenia* species as possible in SW Victoria.
- To determine the distribution and abundance of the pollinators.
- To locate potential establishment sites with large pollinator populations for rare *Caladenia* species.

The work reported here was conducted in collaboration with the Victorian Department of Sustainability and Environment's Threatened Orchid Recovery Team led by Andrew Pritchard.

METHODS

Baiting Techniques

The following section details the general methods used in field experiments (Bower 1996, 2006).

Pollinators were attracted by artificially presenting flowers in the field, a technique known as baiting (Peakall 1990). To examine pollinator relationships, flowers from several taxa or populations were exposed simultaneously, enabling wasps to select preferred taxa in a simple choice test. Flowers for baiting were collected from field populations along with about 15 cm of the stem. Collected flowers were stored between damp paper towelling in a sealed container, one per population sampled, at 4°C for up to 4 weeks prior to use.

Flowers were exposed in the field in glass vials (13 x 50 mm) of water mounted in holes at either end of a wooden block (245 x 70 x 35 mm). Two vials may be used per block with centres 200mm apart. Up to 4 blocks, placed end to end on the ground about 15 to 20 cm apart, were monitored simultaneously (Bower 1996). Usually only 1 vial per block was used, with the vials 35 to 40 cm apart. The height of the flowers above the ground approximated their natural height.

As far as possible the long axis of the blocks was set perpendicular to the prevailing wind so that insects following an allomone trail arrived perpendicular to the blocks. This made it easier to accurately determine which orchid taxon a wasp was approaching. By contrast, having the array parallel to the wind with overlapping allomone trails greatly increased the likelihood of errors being made. Difficulties in interpreting which sample was being approached sometimes occurred when wind direction was variable.

Characteristically, only a small proportion of visiting wasps complete the full behavioural sequence leading to pollination (Peakall 1990). Therefore, behavioural criteria were needed to define when wasps were attracted by a particular taxon. Wasps were regarded as being attracted to flowers if they landed on or close to them (within ca. 5 cm), if they approached directly in flight (within ca. 10 cm), or if they circled them closely. Wasps or other insects that made general approaches to the area, or that did not clearly single out one orchid taxon, were ignored.

Three flowers from the same population were used per vial to minimise the influence of variation in attractiveness among flowers (Peakall 1990). The condition of flowers was monitored during each experiment and they were replaced if they began to wilt or close, or if the normally glossy labellum calli became dull or shrivelled.

Flowers were exposed for a standard 3 min at each site as most males within range of the flowers arrive within the first few minutes of an exposure, after which the number responding declines rapidly (Peakall 1990). By moving the flowers to a new site 20 m or more away, a renewed response was obtained by sampling a new subset of the wasp population. The number of exposure sites utilised at each locality depended on the abundance of responding wasps. If there was no response after 3 to 6 sites a new locality was chosen ranging from a few hundred meters to many kilometers away. In order to test the degree of pollinator specificity, baiting continued at localities where responses occurred until a sample of at least 10-20 wasps was obtained to each taxon attracting them. Due to the scarcity and patchy distribution of some wasps it was not always possible to obtain samples of this size.

Attracted wasps were captured in a large insect net (45 cm diam) lowered rapidly over the flowers with the rim forming a tight seal to the ground. The bottom of the net was held above the flowers to prevent damage to them, and to form a temporary cage around the wasp, which often continued to behave normally. The behaviour of insects landing on flowers was observed through the net to determine if they attempted copulation with the labellum and removed pollinia. Once they finished with the flower, they flew or crawled upwards to the inverted bottom of the net and were easily caught. Captured wasps were aggregated into samples for each set of flowers and locality. Data recorded for each visit was whether the wasp approached the flower in flight, landed on or near it, mounted the labellum calli, attempted mating, removed pollinia, arrived with pollinia, or pollinated it. Attempted mating was defined as probing with the tip of the abdomen, during which the genital claspers are usually everted.

The identity of orchid samples was verified by Andrew Pritchard. Captured thynnine wasps were pinned, dried and sent to Dr. G.R. Brown, Consultant Entomologist, Darwin, Northern Territory, the Australian specialist on the subfamily Thynninae.

Experimental Methods

Four field experimental designs were used to elucidate the pollinator relationships of *Caladenia* species.

Single species test. A single set of flowers from one location and taxon is exposed at locations of interest to determine the wasps attracted.

Sympatric choice test. Two or more sets of orchids from different populations or taxa in the same geographical region were exposed together in the field to determine if each attracted the same or different wasp species. Two *Caladenia* taxa that consistently attracted different pollinators are considered to be reproductively isolated and to represent different biological species. Conversely, two

similar sympatric *Caladenia* taxa that consistently attract the same wasp species are considered to be the same biological species.

Allopatric choice test. In allopatric choice tests, taxa that occur in different geographical regions were exposed together in each of their regions and habitats. Allopatric baiting is useful for determining the relationships of disjunct taxa. Flowers for allopatric tests are transported between regions in a portable refrigerator at 4°C.

Sequential test. Sequential tests control against the effects of variation in attractiveness of flowers. Attractiveness may potentially vary with age, or genetically between individuals (Peakall 1990) or populations, or as a result of the gradual deterioration of flowers in storage after collection. Sequential tests were usually performed at a locality after successful sympatric or allopatric choice tests, or if there was prior knowledge of the pollinators present. Sequential tests aim to determine whether nil responses to flowers in sympatric or allopatric tests are due to the overriding attractancy of other sets of flowers.

They consisted of two parts:

A. a 3 min exposure of flowers with low or nil responses in the previous choice test, followed at the same site by

B. a further 3 min in which attractive flowers are added to the array as controls.

Two main outcomes are possible from sequential tests. If wasps respond to a previously unattractive set of flowers in the first 3 min it was concluded they were simply less attractive than competing flowers in the preceding tests and probably represent the same taxon. If however, wasps responded to the controls but not to flowers exposed in the first 3 min, it may be concluded the flowers first exposed were not attractive and represent a different taxon.

During the first 3 min of each replicate of a sequential test, the control flowers were kept in sealed containers, one per taxon, between layers of moist paper towelling. They were replaced in the containers after the test, before moving to a new exposure site.

Caladenia species tested

Thirteen taxa of *Caladenia* from south west Victoria were tested in October 2006 (Table 1).

Table 1

South West Victorian *Caladenia* Species used in Field Baiting Trials in 2006.

Caladenia taxon	Source of orchid	Threatened status (EPBC Act)
C. australis	Apollo Bay	-
C. calcicola	Bats Ridge Wildlife Reserve, Portland	Vulnerable
C. fragrantissima	Swan Lake, Portland	-
C. formosa	Woohlpooer (N of Hamilton)	Vulnerable
C. grampiana	Bovine Ck., Grampians NP	-
C. hastata	Wilkin FFR, Casterton	Endangered
	Point Danger, Portland	Endangered
C. parva	Lake Fyans	-
C. reticulata	Henham Tk., Grampians NP	-
C. richardsiorum	Robe, South Australia	Endangered
C. tentaculata	Lake Fyans	-
	Illawarra State Forest, Stawell	-
C. venusta	Wilkin FFR, Casterton	-
C. versicolor	Lake Fyans	Vulnerable
C. villosissima	Illawarra State Forest, Stawell	-

Two species, *C. hastata* and *C. tentaculata*, were sampled from two populations each. Five of the species tested are listed as threatened under the Commonwealth EPBC Act, two as Endangered and three as Vulnerable (Table 1).

Baiting locations for thynnine wasps

General locations at which responses by thynnine wasps were obtained to the *Caladenia* taxa are given in Table 2 and Appendix 1. Baiting for potential thynnine wasp pollinators was conducted in areas of natural bushland close to where orchid populations occur, or in similar areas nearby and further afield.

Table 2

Baiting Locations with Responses by Thynnine Wasps to *Caladenia* Species.

Baiting Location	Dates of Trials (Oct. 2006)	*Caladenia* Species with Responses
Devils Garden State Forest, Lake Fyans	10-11	*C. reticulata*, *C. tentaculata* (Lake Fyans), *C. parva*, *C. villosissima*
	19	*C. calcicola*, *C. reticulata*, *C. australis*, *C. richardsiorum*, *C. venusta*, *C. hastata* (Casterton), *C. fragrantissima*,
Woohlpooer State Forest, north of Hamilton	13	*C. reticulata*, *C. tentaculata* (Lake Fyans), *C. parva*, *C. formosa*
Wilkin Flora and Fauna Reserve, Casterton	16	*C. reticulata*, *C. tentaculata* (Lake Fyans), *C. parva*, *C. formosa*, *C. venusta*
Bats Ridge Wildlife Reserve, Portland	17	*C. calcicola*, *C. tentaculata* (Lake Fyans), *C. fragrantissima*, *C. venusta*, *C. hastata* (Portland)
	23	*C. richardsiorum*, *C. calcicola*, *C. australis*, *C. reticulata*, *C. fragrantissima*
Point Danger, Portland	17	*C. fragrantissima*
Swan Lake Coastal Reserve, Portland	24	*C. richardsiorum*, *C. hastata* (Portland)
Barkcarters Track, Lower Gleneld National Park	24	*C. tentaculata* (Lake Fyans), *C. richardsiorum*, *C. venusta*, *C. australis*, *C. parva*
Mt. Richmond National Park	24	*C. richardsiorum*, *C. hastata* (Portland), *C. australis*, *C. parva*

Location coordinates

Precise Geographical Position System (GPS) locations are given in the results section for pollinator populations that are potentially important for the recovery of threatened orchid species. GPS locations are given in the Universal Tranverse Mercator projection (UTM) in Australian Geodetic Datum (AGD) 1966. This projection and datum was used because it is easy to read off most topographical maps which are still in AGD66.

Timing of Field Trials

Field trials were conducted between 9 and 24 October 2006. Of the 16 days in the field, 10 were warm enough (>20°C) for flight activity by male thynnine wasps. Five of the remaining days were too cold (<20°C) and one was too hot and windy (>30°C).

RESULTS AND DISCUSSION

Pollinator relationships

Thirty two field choice tests were conducted involving 326 three minute exposures of flowers (Appendix 1). Thynnine wasps were attracted and collected on all *Caladenia* species except two, *C. grampiana* and *C. versicolor* (Table 3). The names of thynnine wasps in Table 3 are preliminary determinations only (G.R. Brown, pers. comm.).

Table 3

Thynnine Wasps Responding to *Caladenia* species in South West Victoria, 2006

Caladenia species	Thynnine species attracted	No. caught	Pollinator behaviour	No. locations
C. tentaculata (Lake Fyans)	*Thynnoides pugionatus*	93	√	6
C. tentaculata (Illawarra SF)	*Thynnoides pugionatus* ?	9	-	1
C. parva	*Lophocheilus anilitatus*	61	√	6
C. villosissima	*Lophocheilus anilitatus*	32	√	1
C. reticulata	*Phymatothynnus* near *nitidus*	110	√	5
C. calcicola	*Phymatothynnus* near *nitidus*	77	√	2
C. australis	*Phymatothynnus* near *nitidus*	45	√	4
C. formosa	*Phymatothynnus* near *pygidialis* 1	26	-	2
C. fragrantissima	*Phymatothynnus* near *pygidialis* 2	9	√	3
C. richardsiorum	*Phymatothynnus* near *pygidialis* 2?	55	-	4
C. venusta	*Thynnoides* sp.	20	-	3
C. hastata (Portland)	*Lophocheilus villosus* ?	12	-	2
C. hastata (Casterton)	?	4	-	1

The wasps varied in the vigour of their responses to the flowers. Those attracted to *C. tentaculata* (Lake Fyans), *C. parva*, *C. villosissima*, *C. reticulata*, *C. calcicola*, *C. australis* and *C. fragrantissima* all exhibited mating behaviour on the orchid labellum and/or removal of pollinia from the orchid anthers (Appendix 1). These wasps are therefore confirmed pollinators of the respective orchid species (Bower 1996). The wasps attracted to the remaining five *Caladenia* species were not observed to attempt mating on the labellum, or to effect pollinia removal or deposition. The status of these wasps as pollinators is therefore unconfirmed (Bower 1996). However, it is likely they are in fact the pollinators of these orchids and that this would be confirmed by further observations. It is nonetheless clear that the interactions between the wasps attracted to these five orchids are relatively weaker than for the seven taxa with confirmed pollinators, suggesting that mimicry of wasps by these orchids is less effective.

The following sections discuss the results for each orchid species or group of closely related species.

Caladenia tentaculata

The pollinator of *Caladenia tentaculata*, *Thynnoides pugionatus*, was widespread and common in SW Victoria, being attracted in good numbers at six locations from Portland to the Lake Fyans area (Appendix 1). It was strongly attracted to *C. tentaculata* and confirmed as a pollinator. *T. pugionatus* also pollinates *C. tentaculata* at Mallacoota in far east Gippsland and on the South and Central West Slopes, and Central Tablelands of NSW (C. Bower, unpublished). It is an example of a common, widespread sexually deceptive orchid with a common, widespread pollinator.

However, there is some suggestion in the data that there may be two pollinator-specific taxa within *C. tentaculata* in South West Victoria. *C. tentaculata* from Illawarra State Forest seemed much less attractive to thynnine wasps in the field trials than the sample from Lake Fyans (Table 3, Appendix 1). In experiments 9 and 14 in which samples of the two orchid populations were exposed together, all 17 attracted *T. pugionatus* went to the Lake Fyans sample and none to the Illawarra State Forest flowers. Experiment 11 was a sequential test designed specifically to test whether the Illawarra State Forest *C. tentaculata* flowers had any attraction for *T. pugionatus* wasps attracted to the Lake Fyans flowers (Table 4). The test was conducted in an area known to have a large population of the pollinator. The results show that when the Illawarra State Forest flowers were exposed alone in the first three minutes at each exposure site, no *T. pugionatus* were attracted. However, when the Lake Fyans flowers were exposed in the second three minute period at each site, a total of 58 *T. pugionatus* was attracted to the Lake Fyans flowers. Clearly the Illawarra State Forest flowers were unattractive to this population of *T. pugionatus* and may represent a different taxon. The few wasps attracted in this study to the Illawarra State Forest *C. tentaculata* flowers were all from the Devils Garden State Forest and may be a cryptic *Thynnoides* species. However, more work is needed to clarify the situation, since it is possible the Illawarra State Forest flowers may have been overmature or stressed, thereby reducing their attractiveness. However, even declining flowers usually retain some attraction for wasps when exposed on their own.

Table 4
Sequential Test for Attraction of *Thynnoides pugionatus*
to *Caladenia tentaculata* ex Illawarra State Forest
(Experiment 11, Woohlpooer Forest, 5 sites)

Caladenia species	Source of orchid	Thynnine species	No. wasps attracted	No. wasps caught
A[1]. *C. tentaculata*	Illawarra State Forest	-	0	0
B[2]. *C. tentaculata*	Lake Fyans	*Thynnoides pugionatus*	58	30

[1] Exposed alone for first 3 min of test at each site.
[2] Added to array for second three minutes of six minute test at each site

Caladenia parva and *C. villosissima*

Caladenia parva and *C. villosissima* both attracted the same wasp species, *Lophocheilus anilitatus* (Table 3, Appendix 1). However, when the two taxa were exposed together in the same tests, more *L. anilitatus* were attracted to *C. parva* than to *C. villosissima*, 34 and 10, respectively (experiments 3, 5 and 7, Appendix 1). A sequential test was conducted to test the attractiveness of *C. villosissima* for *L. anilitatus* in the absence of *C. parva* (Appendix 1, Table 5).

Table 5
Sequential Test for Attraction of *Lophocheilus anilitatus* to *Caladenia villosissima* ex Illawarra State Forest (Experiment 8, Devils Garden State Forest, 7 sites)

Caladenia species	Thynnine species	No. wasps attracted	Comments
A[1]. *C. tentaculata*	*Thynnoides pugionatus*	4	
A[1]. *C. villosissima*	*Lophocheilus anilitatus*	42	1 remove pollen, 2 mate
B[2]. *C. parva*	*L. anilitatus*	24	

[1] Exposed alone for first 3 min of test at each site.
[2] Added to array for second three minutes of six minute test at each site

The results in Table 5 confirm that *L. anilitatus* is highly attracted to *C. villosissima* and capable of pollinating it. This indicates that *C. parva* and *C. villosissima* belong to the same biological species since they share the same pollinator and occur in the same geographical region and similar habitats. Previous work has shown that *Caladenia phaeoclavia* is also pollinated by *L. anilitatus* and is synonymous with *C. parva*. The data reported here indicate that *C. parva* should also include *C. villosissima*.

Caladenia reticulata complex

Three members of the *Caladenia reticulata* complex, *C. reticulata*, *C. calcicola* and *C. australis*, all strongly attracted the same small nondescript thynnine wasp species, *Phymatothynnus* near *nitidus* (Table 3, Appendix 1), which behaved as a pollinator on all three taxa. *P.* nr. *nitidus* was very common and widespread, although patchily distributed. It is possible that *P.* nr. *nitidus* itself comprises a complex of cryptic species with different allomones or Specific Mate Recognition Systems (SMRS), as has been found for the thynnine pollinators (*Neozeleboria*) of *Chiloglottis trilabra* and its near relatives (Bower and Brown 1997) and some of the *Chiloglottis valida* complex (Bower 2006). Therefore, each taxon in the *C. reticulata* complex was tested against different populations of *P.* nr. *nitidus* and against each other in sequential tests (Appendix 1) as per Bower and Brown (1997). The results of the sequential tests are given in Table 6.

Table 6

Sequential Tests for Attraction of *Phymatothynnus* near *nitidus* to three taxa in the *Caladenia reticulata* complex

Caladenia species	Thynnine species	No. wasps attracted	Comments
Devils Garden State Forest, 19.10.2006, 5 sites			
A[1]. *C. calcicola*	*P.* nr. *nitidus*	36	1 mate on labellum
B[2]. *C. reticulata*	*P.* nr. *nitidus*	34	6 mate on labellum
Devils Garden State Forest, 19.10.2006, 4 sites			
A. *C. australis*	*P.* nr. *nitidus*	111	3 mate on labellum, 1 pollinia removal
B. *C. calcicola*	*P.* nr. *nitidus*	19	1 mate on labellum
Bats Ridge Wildlife Reserve, 23.10.2006, 12 sites			
A. *C. calcicola*	*P.* nr. *nitidus*	>85	1 pollinia removal
B. *C. australis*	*P.* nr. *nitidus*	33	
Bats Ridge Wildlife Reserve, 23.10.2006, 4 sites			
A. *C. calcicola*	*P.* nr. *nitidus*	>88	
B. *C. reticulata*	*P.* nr. *nitidus*	37	

[1] Exposed alone for first 3 min of test at each site.
[2] Added to array for second three minutes of six minute test at each site

The data in Table 6 show no indication of assortative attraction among the two populations of *P.* nr. *nitidus* to the tested pairs among the three *C. reticulata* complex taxa. This strongly suggests that the two *P.* nr. *nitidus* populations share a common sex pheromone, and that the three orchid taxa have the same allomone mimic of the wasp sex pheromone. This is strong evidence that the three orchid taxa are simply minor geographical variants within the same widespread biological species, *C. reticulata*.

***Caladenia formosa*, *C. fragrantissima* and *C. richardsiorum*.**

Caladenia formosa, *C. fragrantissima* and *C. richardsiorum* all attracted black thynnine wasps initially identified as *Phymatothynnus pygidialis* (Table 3). Subsequent dissections of the wasp genitalia showed that those (*P.* nr. *pygidialis* 1) attracted to *C. formosa* are distinct from those attracted to *C. fragrantissima* (*P.* nr. *pygidialis* 2) and *C. richardsiorum* (*P.* nr. *pygidialis* 2?), which are quite similar and may be the same morphological species. However, by contrast to the three taxa in the *C. reticulata* complex discussed above, *C. fragrantissima* and *C. richardsiorum* are quite dissimilar morphologically and do not appear to be closely related. There are two possible explanations for the results; either the two orchids have the same allomone and maintain genetic isolation by geographical and/or habitat separation, or *P.* nr. *pygidialis* 2 comprises two cryptic species with different sex pheromones. As with the *C. reticulata* complex, sequential field choice tests could be used to determine whether assortative attraction occurs; i.e. whether different responses to the three orchids were given by particular wasp populations, suggesting differences in attractant odours among both wasps and orchids. However,

sequential tests were not employed because it was only realised the wasps might be the same species after the preliminary identifications were received from Dr. Brown.

Without sequential tests unequivocal conclusions cannot be drawn from the data, although some inferences can be made. All the available results for *C. formosa*, *C. fragrantissima* and *C. richardsiorum* from Appendix 1 have been brought together in Table 7. In seven experiments two of the three orchid taxa were compared in choice tests. *C. formosa* was only involved in one choice test with one of the other two taxa, *C. fragrantissima*, at Bats Ridge (Experiment 16). Although all the attracted *P. pygidialis* (?) went to *C. fragrantissima*, the numbers are low, and the *C. formosa* flowers were in poorer condition possibly making them less attractive. However, past experience indicates some attraction usually remains even in flowers that are closing.

C. fragrantissima and *C. richardsiorum* were exposed together in six tests (Table 7). In five of the tests at five different sites, *C. richardsiorum* attracted a total of 105 wasps, while *C. fragrantissima* attracted none. In the sixth test at a sixth site, 15 wasps went to *C. richardsiorum* and two to *C. fragrantissima*. This may suggest that the *C. richardsiorum* pollinator is much more common and widespread than that of *C. fragrantissima*. However, in the absence of *C. richardsiorum*, *C. fragrantissima* appeared to be relatively more attractive to *P. pygidialis* (?), attracting a total of 19 wasps at Bats Ridge and Point Danger (experiments 16-18, Table 7). This observation suggests that *C. fragrantissima* may have the same allomone as *C. richardsiorum*, but in lower quantities, making it less attractive in choice tests. These hypotheses can only be tested by specific sequential choice tests in the field.

Caladenia venusta

Twenty wasps, thought to be a species of *Thynnoides*, were caught after being attracted to *Caladenia venusta* at three test locations (Appendix 1, Table 3). The attraction was generally weak with wasps approaching, but not landing or attempting copulation. Clearly *C. venusta* emits some allomone, but the quantity or quality appears too low to stimulate strong mating behaviour in the wasps (see also discussion under *C. hastata*). However, the wasp species attracted in the tests may be minor responders (Bower 1996), rather than the true pollinator.

Table 7

Tests for Attraction of Different Populations of *Phymatothynnus pygidialis* to *Caladenia formosa*, *C. richardsiorum* and *C. fragrantissima*

Caladenia species	Thynnine species	No. wasps attracted	Comments
Experiments 12 &13, Craigs Road, Woohlpooer Forest, north of Hamilton, 13.10.2006, 30 sites			
C. formosa	*P.* aff. *pygidialis* 1	38	
Experiment 14, Mill Swamp, Wilkin Flora and Fauna Reserve, Casterton, 16.10.2006, 41 sites			
C. formosa	*P.* aff. *pygidialis* 1	3	
Experiment 16, Bats Ridge Wildlife Reserve, Portland, 17.10.2006, 5 sites			
C. formosa	-	0	
C. fragrantissima	*P.* aff. *pygidialis* 2	6	
Experiment 17, Bats Ridge Wildlife Reserve, Portland, 17.10.2006, 10 sites			
C. fragrantissima	*P.* aff. *pygidialis* 2	8	
Experiment 18, Point Danger, Portland, 17.10.2006, 23 sites			
C. fragrantissima	*P.* aff. *pygidialis* 2	5	1 pollinia removal
Experiments 22, 23 & 24, Waldron Road & SW Block, Devils Garden State Forest, 22.10.2006, 24 sites			
C. richardsiorum	*P.* aff. *pygidialis* 2?	37	
C. fragrantissima	-	0	
Experiment 25, South Boundary Track, Devils Garden State Forest, 22.10.2006, 18 sites			
C. richardsiorum	*P.* aff. *pygidialis* 2?	15	
C. fragrantissima	*P.* aff. *pygidialis* 2	2	
Experiment 26, Bats Ridge Wildlife Reserve, Portland, 23.10.2006, 8 sites			
C. richardsiorum	*P.* aff. *pygidialis* 2?	45	
C. fragrantissima	-	0	
Experiments 27 & 28, Bats Ridge Wildlife Reserve, Portland, 23.10.2006, 8 sites			
C. fragrantissima	*P.* aff. *pygidialis* 2	1	
Experiment 29, Swan Lake Coastal Reserve, Portland, 24.10.2006, 11 sites			
C. richardsiorum	*P.* aff. *pygidialis* 2?	2	
C. fragrantissima	-	0	
Experiment 30, Barkcarters Track, Lower Glenelg Natioanl Park, 24.10.2006, 7 sites			
C. richardsiorum	*P.* aff. *pygidialis* 2?	2	
C. fragrantissima	-	0	
Experiment 31, North East Boundary Track, Mt. Richmond National Park, 24.10.2006, 8 sites			
C. richardsiorum	*P.* aff. *pygidialis* 2?	4	
C. fragrantissima	-	0	

Caladenia hastata

Flowers from two populations of *Caladenia hastata*, Point Danger and Casterton, were tested at five and three, well separated locations, respectively (Appendix 1). Forty four wasps, tentatively identified as *Lophocheilus villosus* or a near relative, were attracted to the Point Danger flowers, forty two of which were attracted in Mt. Richmond National Park (Appendix 1). The responding wasp did not mate with, or remove pollinia from, the flowers, and showed only a relatively weak attraction involving approaches to, and loops around, flowers without landing. This suggests the mimicry of this wasp by the orchid is not as complete as for many other sexually deceptive species. In particular, the labellum of *C. hastata* lacks the dense female wasp-mimicking clusters of dark maroon calli found in highly successful sexually deceptive species, such as the Green Comb Spider Orchids, *C. tentaculata* and *C. parva*. It may be that *C. hastata* has an allomone the same as, or close to, that of *L. villosus* (?), but lacks effective close range visual mimicry of the wasp female. *C. hastata* may represent an orchid species in the earlier stages of evolutionary development of sexual deception. The status of this wasp as the pollinator of *C. hastata* remains to be confirmed.

No wasps were attracted at Point Danger, despite extensive baiting with *C. hastata* in that area. The lack of response at Point Danger, and the lack of natural pollination of the local *C. hastata* population over many years, suggests the pollinator has become extinct at Point Danger.

The wasp(s) attracted to the Casterton flowers has yet to be identified and were also weakly attracted.

Caladenia versicolor

Flowers of *Caladenia versicolor* from Lake Fyans failed to attract any thynnine wasps after 163 exposures at four localities in the Lake Fyans and Casterton areas (Appendix 1). The pink-mauve labellum markings of *C. versicolor* are not consistent with mimicry of female thynnine wasps, but are more like flowers pollinated by native bees. *C. versicolor* is also sweet-scented, especially on warm days; another characteristic of bee-pollinated flowers. On one occasion in Woohlpooer forest (experiment 13, Appendix 1) a domestic honeybee landed briefly on a *C. versicolor* flower supporting the view it is bee-pollinated. No domestic bees interacted with any of the other *Caladenia* species in any tests. It is tentatively concluded that *C. versicolor* is most likely pollinated by native bees that also visit other purple-flowered herbs, such as chocolate lilies. Bee pollination is not well documented among Spider Orchids, although *Caladenia rosella* has been reported to attract bees.

Conservation Findings

A major objective of this study was to determine the pollinators of five threatened *Caladenia* species and to ascertain as much as possible about the distribution and abundance of their pollinators. It was anticipated this information would assist in developing appropriate recovery actions for these species and their pollinators that would minimise the need for hand pollination to multiply the species in the future. Possible recovery actions may include habitat augmentation to increase pollinator populations in current threatened orchid locations, and / or relocation or reestablishment of threatened orchids in areas found to support large pollinator populations. In this section the findings of the study relevant to threatened species recovery is outlined for each species.

Caladenia calcicola

The pollinator of *Caladenia calcicola* is locally common in the Bats Ridge Wildlife Reserve, especially in the south eastern parts of the reserve along the tracks running approximately north and west from the south eastern corner. However, the pollinator is scarce on the ridgetops where *C. calcicola* grows, accounting for the low natural pollination levels in this population. The orchid may currently be favouring the ridgetops because the skeletal soil maintains a relatively open habitat more suited to it. By contrast, the habitat in the lower parts of the reserve, where the pollinators are abundant, is very dense and unsuited to *C. calcicola*. This is probably due to a lack of fire for many years and is being exacerbated by invasion of Coast Wattle, *Acacia longifolia* var. *sophorae*.

A suggested management option to enhance pollination is to strategically control burn parts of the reserve, preferably in autumn when the orchid is dormant and the wasp is in its subterranean larval stages. If control burns cannot be implemented, mechanical means of opening up the habitat may be needed, perhaps initially in trial areas. *C. calcicola* could then be reestablished into opened areas close to pollinator populations. Successful establishment of populations close to pollinators should result in natural production of seed and long term population viability, albeit with the need for ongoing habitat management.

Appendix 2 gives the GPS coordinates of sites in the Bats Ridge Wildlife Reserve where the *C. calcicola* pollinator was attracted.

Caladenia formosa

Despite several attempts over two days, no pollinators were attracted to flowers of *Caladenia formosa* at the Woohlpooer site. Good responses to *C. formosa* by *Phymatothynnus* near *pygidialis* 1 were obtained approximately two kilometres away on Craigs Road, also in the Woohlpooer Forest. The best

responses occurred in areas with a diverse shrub understorey. Much of the Woohlpooer forest is very open with few shrubs and these areas did not produce responses to *C. formosa* or other *Caladenia* species, except for *C. parva*. Best wasp populations were found in areas with flowering shrubs which included *Leptospermum myrsinoides*, *Hibbertia riparia*, *Calytrix tetragona* and *Hakea rostrata*. These shrubs, with the probable exception of the *Hibbertia*, are ideal nectar sources for thynnine wasps and account, in part, for the large wasp populations in their vicinity. The shrubby areas are mostly associated with *Eucalyptus baxteri* on sandy rises. Downslope of the *E. baxteri* is a transition to *Eucalyptus melliodora* and *Eucalyptus leucoxylon* with heavier soils and fewer shrubs. The flats and gullies are mainly occupied by *Eucalyptus camaldulensis* and lack shrubs altogether.

There are two options for improving the pollination rates of *C. formosa*:

- Enhance the areas around the existing *C. formosa* population with plantings of myrtaceous and proteaceous shrubs endemic to the area, including those listed above, but also *Leptospermum continentale*. Shrub species that flower before and after *C. formosa* are needed as well as those that flower at about the same time. This would provide a food source for the pollinator population throughout the male flight period, which could commence before the orchids flower and continue after it. This option is suggested because there is evidence (Richard Hill, pers. comm.) that some natural pollination occurs in the *C. formosa* population, indicating the pollinator is present nearby, possibly in low numbers.

- Reestablishment of *C. formosa* in the area along Craigs Road close to, or within, the areas where there are high natural pollinator populations. It may be better from a horticultural point of view to establish *C. formosa* in the Yellow Box / Yellow Gum areas adjacent to the shrubby Baxter's Stringybark habitat where the pollinators are concentrated. Appendix 2 contains the GPS coordinates of all locations on Craigs Road where the putative *C. formosa* pollinator was attracted.

Caladenia hastata

No pollinators of *Caladenia hastata* were attracted at Point Danger and no natural pollination has occurred there for many years (Andrew Pritchard, pers. comm.) suggesting the pollinator is extinct in that area. The best responses to *C. hastata* (Point Danger population) were obtained in a limited area of Mt. Richmond National Park. However, it is not certain that *Lophocheilus villosus* (?) is the pollinator of *C. hastata*, although it is the best candidate currently available. This wasp is likely to occur more widely within Mt. Richmond NP and possibly in similar areas further afield. More survey work is needed

to define the distribution and abundance of *L. villosus*, and to determine if any other species is attracted more strongly.

However, in the meantime it is reasonable to assume *L. villosus* is the pollinator and to plan recovery actions for *C. hastata* accordingly. The best available option for the long term conservation of *C. hastata* in terms of pollinators is to establish populations in parts of Mt. Richmond NP where *L. villosus* is common. At present, only one location is known on the North Boundary Track of the park in an area of heathy woodland on sandy soils. The GPS coordinates of locations where wasps responded to *C. hastata* are given in Appendix 2.

Caladenia versicolor

No evidence was obtained in this study that *Caladenia versicolor* is pollinated by sexual deception of male thynnine wasps. Rather, the limited evidence suggests it is pollinated by native bees by food deception. It is recommended that further research be conducted to demonstrate conclusively that *C. versicolor* is food deceptive, to determine the native herbs it mimics and its pollinators. This will guide any strategy for habitat enhancement for pollinators at Lake Fyans, or habitat selection for reestablishment programs.

However, in lieu of this, it seems likely that *C. versicolor* mimics purple-flowered herbs, such as Chocolate Lilies, *Dichopogon* sp., and is pollinated by native bees that visit them. This suggests that good reestablishment sites will be areas of open woodland with abundant native purple-flowered herbs in the ground layer.

Caladenia richardsiorum

The sample of *Caladenia richardsiorum* tested in this study came from Robe in South Australia. *C. richardsiorum* is not known to occur in Victoria, yet it attracted a wasp, identified tentatively as *Phymatothynnus* near *pygidialis* 2 (?), that was common at four locations in this study. This wasp is probably the pollinator of *C. richardsiorum* in South Australia, where it is also likely to be common. It appears that the pollinator may not be the limiting factor in the distribution of *C. richardsiorum*, for which other potential constraints on distribution and abundance should be considered.

FUTURE WORK

The work in spring 2006 in south western Victoria has made significant progress. However, some aspects are incomplete and the study has raised a number of new questions. In the remaining two years of this project it will be important to consolidate and extend these results. Among the priorities for this project will be to:

- Extend the work to other threatened and non-threatened sexually deceptive *Caladenia* species in south eastern Australia.
- Verify *Lophocheilus villosus* as the pollinator of *Caladenia hastata*, or determine if another species fills that role. Find more populations of the *C. hastata* pollinator.
- Determine the pollinator of the Casterton population of *C. hastata*.
- Determine by appropriate sequential choice tests whether there are two cryptic species in *Phymatothynnus* near *pygidialis* 2. Also investigate this problem by examination of wasp genitalia (Dr Graham Brown).
- Determine if other members of the *Caladenia reticulata* complex are pollinated by *Phymatothynnus* nr. *nitidus*.
- Determine the pollinator of *C. grampiana*.

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REFERENCES

Bates, R. (1996). Little known South Australian Spider Orchids. *The Orchadian* **12,** 29-32.

Bond, W.J. (1984). Do mutualisms matter? Assessing the impact of pollinator and disperser disruption on plant extinction. *Philosophical Transactions of the Royal Society London* B, **344,** 83-90.

Bower, C. C. (1992). The use of pollinators in the taxonomy of sexually deceptive orchids in the subtribe Caladeniinae (Orchidaceae). *The Orchadian*, **10**, 331-8.

Bower, C.C. (1996). Demonstration of pollinator-mediated reproductive isolation in sexually deceptive species of *Chiloglottis* (Orchidaceae: Caladeniinae). *Australian Journal of Botany* **44**, 15-33.

Bower, C.C. (2001). Caladenia – Pollination. In Pridgeon, A.M., Cribb, P.J. and Chase M.W. 'Genera Orchidacearum Volume 2 Orchidoideae (Part 1)' Oxford University Press: Oxford.

Bower, C.C. (2006). Specific pollinators reveal a cryptic taxon in the Bird Orchid, *Chiloglottis valida sensu lato* (Orchidaceae) in south-eastern Australia. *Australian Journal of Botany* **54,** 53-64.

Bower, C.C. and Brown, G.R. (1997). Hidden biodiversity: Detection of cryptic thynnine wasp species using sexually deceptive, female-mimicking orchids. *Memoirs of the Museum of Victoria* **56,** 461-466.

Buchmann, S.L. and Nabhan, G.P. (1996). *The Forgotten Pollinators.* Island Press, Washington.

Dressler, R. L. (1981). .*The Orchids - Natural History and Classification.* Harvard University Press, Cambridge, Massahusetts.

Kearns, C.A., and Inouye, D.W. (1997). Pollinators, flowering plants, and conservation biology. *Bioscience*, **47,** 297-307.

Kearns, C.A., Inouye, D.W. and Waser, N.M. (1998). Endangered mutualisms: The conservation of plant-pollinator interactions. *Annual Reviews of Ecology and Systematics*, **29,** 83-112.

Leigh, J., Boden, R. and Briggs, J. (1984). *Extinct and Endangered Plants of Australia.* Macmillan, South Melbourne.

Paulus, H.F. and Gack C. (1990). Pollinators as prepollinating isolation factors: evolution and speciation in *Ophrys* (Orchidaceae). *Israel Journal of Botany* **39,** 43-79.

Peakall, R. (1990). Responses of male *Zaspilothynnus trilobatus* Turner wasps to females and the sexually deceptive orchid it pollinates. *Functional Ecology* **4,** 159-167.

Peakall, R. and Beattie A.J. (1996). Ecological and genetic consequences of pollination by sexual deception in the orchid *Caladenia tentaculata*. *Evolution* **50,** 2207-2220.

Schiestl, F.P., Peakall R,. Mant J.M., Ibarra F., Schulz C., Francke S. and Francke W. (2003). The chemistry of sexual deception in an orchid-wasp pollination system. *Science* **302,** 437-438.

Stoutamire, W.P. (1983). Wasp-pollinated species of *Caladenia* in South-western Australia. *Australian Journal of Botany*, **31**, 383-94.

LAST MEETING - 1ST JUNE 2007

Compiled from notes provided by Andrew Pritchard.

Andrew Pritchard, DSE Threatened Species Project Officer, from the Warrnambool / Portland area, gave an informative PowerPoint presentation *Threatened Orchids of South Western Victoria* (not north western Victoria as previously advertised in the *Bulletin*).

Andrew and a small but enthusiastic team of scientists, together with Colin Bower, an entomologist from New South Wales, conducted the following research during 2006. Colin's work was partly funded by the Australian Orchid Foundation, with assistance from DSE Victoria.

Many Australian terrestrial orchids mimic female thynnine wasps and are pollinated by males trying to mate with the flower. Sexually deceptive orchid flowers are characteristically dull coloured, often inconspicuous, are pollinated by males of a single specific wasp species, emit a mimic of the female sex pheromone to attract males from a distance, have labellum structures that mimic the shape and colour of the female wasp, and lack nectar and sweet odours. Female thynnine wasps are wingless and spend most of their lives burrowing in soil and seeking beetle larvae to parasitise. They emerge every few days and advertise for males by emitting pheromones. The male wasps respond rapidly, pick up the smaller females and fly them, in copula, to nectar sources where the females feed.

Because many terrestrial orchid species are pollinator specific, if the pollinator becomes locally extinct due to habitat modification and loss of critical resources, that orchid population will become vulnerable or locally extinct. If the pollinator becomes extinct over the whole range of the orchid, that orchid species will become totally extinct unless it has the ability to reproduce vegetatively and/or self pollinate.

The best reproduction in sexually deceptive orchids results where high orchid and pollinator populations occur together, so sexually deceptive orchids with common pollinators are usually also common while orchids with rare pollinators are likely to be also rare.

These considerations suggest that knowledge of the identity of pollinators, and their distribution and abundance, may be important for developing successful recovery strategies for threatened orchid species. Recovery Plans should include objectives to determine how much natural pollination is occurring; identify the pollinators; determine the distribution, abundance and habitats of pollinators; use that data to determine if habitat enhancement for pollinator populations is feasible at orchid sites or, alternatively, locate suitable sites with good pollinator populations for establishment of new self-sustaining orchid populations. In the long term, it is not a good strategy to hand pollinate to maintain orchid populations.

The project aims to collect and identify the pollinators of as many threatened and other *Caladenia* spp. as possible in south west Victoria; to determine the distribution and abundance of the pollinators; and to locate potential establishment sites with large pollinator populations for rare *Caladenia* species.

Sexually deceptive orchids are highly attractive to their pollinators, yet it is rare to see insects on flowers in the field. The reason is that male wasps learn to avoid the locations of non-rewarding stimuli. The secret to collecting pollinators is to provide the wasps with stimulae (flowers) at new locations, which they interpret as a potential new female. Males respond within seconds to new calling females, and most nearby males will arrive at a new flower location within a few minutes. However, once males have learnt the stimulus at a particular location is false, they generally do not respond again. This behaviour can be exploited in the technique known as 'baiting'.

Thirteen species of orchids were tested - *Caladenia australis* (Apollo Bay), *C. calcicola* (Bats Ridge) *C. fragrantissima*

Caladenia versicolor photographed by Jeff Blackman.

Caladenia hastata photographed by Jeff Blackman.

(Swan Lake), *C. formosa* (Woolpooer), *C. grampiana* (Grampians NP), *C. hastata* (Casterton, Point Danger), *C. parva* (Lake Fyans), *C. reticulata* (Grampians NP), *C. richardsiorum* (Robe), *C. tentaculata* (Lake Fyans, Illawarra SF), *C. venusta* (Casterton), *C. versicolor* (Lake Fyans) and *C. villosissima* (Stawell).

No thynnine wasps were attracted to *C. versicolor* after 163 three minute exposures at Lake Fyans, Devils Garden SF, Woolpooer SF and Wilkin Flora and Fauna Reserve. The pink-mauve labellum markings of *C. versicolor* are not consistent with mimicry of female thynnine wasps, but are more like flowers pollinated by native bees. *C. versicolor* is also sweet-scented; another characteristic of bee-pollinated flowers. It is tentatively concluded that *C. versicolor* is most likely pollinated by native bees that also visit other purple-flowered herbs such as chocolate lilies. Bee pollination is not well documented among spider orchids, and *C. versicolor* may be unique in this regard.

Lophocheilus villosus, the pollinator of *C. hastata*, is rare. This pollinator was not located at Point Danger, which was consistent with the lack of *C. hastata* pollination at this site. However, the pollinator was found at Mt. Richmond NP on the last day of the survey, and there was no time available to test whether the Casterton population attracts the same wasp. Further work is needed at both sites.

Future work needs to be done on other species in New South Wales, Victoria and South Australia; there is a need to verify bee-pollination in *C. versicolor*; and there is a need to search for more populations of *C. hastata* at Point Danger and to determine the pollinator of the Casterton population. The team want to conduct specific choice tests to determine if there are three cryptic pollinator species in *Phymatothynnus pygidialis*; determine how many members of the *C. reticulata* complex share the *P.* nr. *nitidus* pollinator; and determine the pollinator of *C. grampiana*.

Kate Vlcek of DSE South West (Warrnambool) is working on the translocation of *C. hastata*. The translocation of 63 *C. hastata* (Mellblom's Spider Orchid) seedlings occurred in August 2006. The translocation team consisted of 16 workers, including five regional staff. Plants were four year old seedlings, the results of direct seeding trials at Point Danger. Both host and recipient sites were located at Point Danger, and the work is part of an ongoing translocation program begun in 1982. Seven previous translocations / reintroductions have taken place since 1982 with an 87% success rate since 2002. The purpose of these translocations is to perfect techniques for the future; to increase the number of sites and "spread the risk"; also to improve vigour of remaining plants at the host site where they are growing in cramped conditions.

International student volunteers assisting with the translocation of *Caladenia hastata*.
A DSE photograph.

On "The Big Day"', the team were briefed and they scrubbed down before splitting into groups. Plants were removed from crowded sites and data was recorded. The new site was prepared prior to planting; seedlings were planted at 0.5 metre intervals along a 50 metre transect and then caged. Although the original plan was to plant out up to 105 plants into two transects over the day, things don't always go according to plan. For example, the most vigorous tubers may not be the easiest (and quickest) to remove.

Ongoing monitoring, watering and follow-up care is necessary. The team will also research to determine pollinator identification and occurrence for potential reintroduction / translocation sites. Further expansion of Alcoa is likely and will thus necessitate further relocations of *C. hastata* plants.

A total of 63 plants were moved to two new sites within the reserve, the translocation involving the assistance and expertise of many people.

With the future development of sites such as Point Danger resulting in habitat loss and degradation, having the knowledge and experience to undertake translocations and reintroductions is unfortunately becoming increasingly relevant.

Peter Keirnan pointing to *Caladenia versicolor* in the area whereA.N.O.S. Vic. did recovery work post Grampians fire.
A DSE photograph.

Andrew thanked A.N.O.S. Vic. members for their assistance over many years with orchid recovery. Last year, recovery efforts after the Grampians fire were instrumental in assisting the protection of *Caladenia versicolor*. The work consisted of removing soil disturbed by the fire, and the installation of guards around emerging leaves allowed the plants to flower freely. Searching by the A.N.O.S. Conservation Group during spring uncovered a large number of new populations of orchids within the Grampians fire area, and further work this year will be conducted on the *Pterostylis chlorogramma* and *Paracaleana disjuncta* populations that were discovered last year.

We have had our first meeting at our new venue, the Toorak Uniting Church Hall in Toorak Road. Obviously it will take a little while to get used to our new meeting place, and to iron out the odd problem. A good sign that members are willing to accept our new location was the slightly higher attendance at the June meeting; and a lot of people really appreciated the warm and cosy atmosphere. There are heaters in the hall! There is a few car parking spaces behind the hall for those who need to load and unload our equipment, a drive-through to drop off and collect display plants, and ample parking on Toorak Road and side streets.

alpina

Caladenia lyallii Mountain Caladenia

1969	Nov 23rd	Flowering on Mt. Baw Baw.
1970	Jan 1st	Many plants in seed at Tamboritha Saddle.
1970	Jan 25th	Many plants in seed at the Cobberas.
1971	Jan 30	Plants in seed on Mt Howitt Hike.
1974	Dec 9th	Flowering at Tamboritha "Chalet" area.
1977	Nov 25th	" " Mt. St. Guinear.
1994	Jan 16th	" " Mt. St. Guinear.

1998 In Muelleria 11 1998. C. lyallii is changed to C. alpina because C. lyallii is considered endemic to New Zealand.

Caladenia aurantiaca (Golden Tip.

1968 Oct 20th Flowering at Senini's Track.
Nov 3rd " " " "
1974 Oct 18th " " Mullundung Forest. Identification verified by Herbarium. Letter dated 22nd May 1975. Harrup's Highway almost at Froud's Rd. from 13 mile Road.
1975 Oct Flowering along Chessum Road.
1975 Sept 14 " " Goodwin Rd. in Mullungdung Forest.

Caladenia caerulea (Pronounced Serolea) Blue Caladenia

1969 Aug 29th Flowering at Granite Rock. Only the one flower. Flower closed up before we reached home & as weather was not sunny did not open up again. Therefore could not write up specimen - however we noticed the particulars: Flower about 3 inches high - beautiful deep blue.

Dorsal Sepal:- erect slightly broader than lateral sepals & petals but otherwise the same.

Lateral Sepals & Petals: About ⅝" long & less than ¼" wide. spreading as in Pink Fingers.

Labellum: Just turned under - Three lobed - with dark blue bars on all three lobes. lateral lobes very high and entire

Head: Partly eaten but very like the Pink Fingers. Whole flower just like a blue form of Pink Fingers.

Labellum - Yellow coli in two rows right to tip of tongue.

1970 Oct 11th Found specimen we suspect to be C. caerulea on rifle range at Heyfield. Petals & sepals deep blue but labellum was also faded however perhaps because the pollinea were in-tact the column was fairly fresh and deep burgundy with same colour wings very erect and even as to width for entire length. Very

similar to illustration in Nicholls.

1971 Aug 28th Flowering at Wildflower Reserve at Stawell & also at Mrs Bennetts on Heathlands. Do not remember it in the Grampians proper yet.

1974 ~~Nov 9~~ Sept 7th Flowering corner of Troud's Rd & Harrup Highway Mullumdung Forest.

2001 July 11th In Pictorial Guide to Wild Orchids of Victoria, Jeanes & Backhouse change the genus for this orchid & Caladenia deformis to Cyanicula but census Jan 2000 still leaves it under Caladenia.

Caladenia Carnea

1966 25 Sept Flowering at Stony Creek
Scape 4" deep pink flower to white.
Dorsal Sepal Ereet.
lateral Petals & Sepals - all similar and vertical.
Labellum - 4 m.m. lateral lobes ⅔ way along centree lobe. Red stripes across 3 lobes inside. Yellow cali stalked, in 2 rows. Tip yellow
Column - 3mm. White with red markings. Wings widest at bottom. Pink at Tip of column.
heaf - elongated 1½"
1967 1 Oct Flowering in T'gon Sth Reserve.
Oct 15th Found flower with 2 labellum both complete but only one column and one extra petal that appeared to be in the centre of the lower 4 petals.
Oct 13th Flowering at habertouche with 3 flowers on stem
1968 Sept 28th Flowering near Dutson Downs.
Oct 8th " T. Sth. Reserve.
13th Found white variety of C. Carnea - only color was the stripes on column.
27th Still flowering T'gon Sth Res., Some plants with two flowers to one stalk. In our experience this is not common. Many plant flowering further along Cali. Sth Rd
Nov 17th Still flowering Shingle Ck. Res.
1969 Aug 29th Flowering at Providence Ponds & Granite Rock. At Granite Rock the color varied from very dark pink to almost white.
Sept 13th Flowering at Longford.

1969 Oct 12th Flowering in Tynong North.
" 17th " along Clarke's Rd.
Nov 2nd " at Briagalong
1970 Sept 14th " " Dutson Down Road.
Oct. Flowering at Heyfield Rifle Range.
Feel these were different variety to ones at Tigon South.
Unusual feature was that column was bent over the labellum so much as to make it difficult to see the centre of the labellum. Column very broad with deep red stripes or blotches across it - top of column behind in front of pollinea also deep red.
All sepals & petals broad 4 mm wide at widest part but turned back at tips to give the impression of being pointed. Dorsal sepal just slightly curved at very tip. All sepals & petals either white or deep pink with dark maroon stripe 1/3 width of petal down the back & so strongly marked as to slightly visible from front.
Labellum Mid lobe very turned under at point ~~deep red at very tip~~ red stripes between calli just going from calli to edge of mid lobe - not onto lateral lobes. Finger like teeth on mid lobe Stalked calli ~~white~~ yellow in 2 rows.
Lateral lobes entire very deep - 2/3 length of mid-lobe. Dark stripe on back on petals etc has dark dots on each side of the stripe.
Whole flower 2 cm across, Sepals & Petals approx 1 cm long. About 8 cm high.

Caladenia Carnea 83 (Cont).

1971 Sept 3rd Flowering near road from Horsham to Stawell. Flowers very deep colour but not very large. 18 mm across. ~~Cata~~ labellum with row of stalkless cali around edge of point.

Oct 23rd Flowering Morwell Nat. Park.
24th " " at Reids Corner
24th Var. pygmea Flowering at Reid's Corner

1974 Oct " " " " Mullungdung Forest

1975 Oct C. carnea " " " "
all colours from white to deep pink and almost as big as C. alba. Could perhaps be C. carnea var gigantica.

1975 Nov 2 Flowering along Anzac Rd, Mullungdung Forest.

1991 Sept 14th Many, many plants flowering " "
found at least one flower but probably more which appear to be C. carnea but had the dorsal sepal bent over & the labellum up near the column to hide the last half of labellum with the red markings across it. Dr. Parsons identified these specimens as C. carnea var carnea (see notes). They had little burgandy glands on sepals & ovary.

1993 Sept 5 Many plants growing in Mullungdung Forest along Massey's Rd, Boundary Road & Big Tower Road. Description under 1970 October at Heyfield Rifle Range fits these specimens too.

1994 Oct 28 Flowering at Tgon 5th Reserve.
1994 Nov 9th " on Licola weekend.
1996 Oct 12 " " Mt Heddrick
2001 July 11th Pictorial Guide to Wild Orchids of Victoria suggest slide 205 C. carnea var pygmea is probably C. ~~pallida~~ mentiens with

its pointed sepals & dorsal sepal erect.

Slide 2367 C. carnea var pygmea is probably C. pusilla with its rounded sepals & dorsal sepal hooded over column.

2002 Nov 25th flowering in Holey Plains State Park.

2003 Oct 25th " " Anzac Rd & Big Tower Road, in Maffungdung.
Some specimens real red & also pink & white ones.

2004 Nov 1. Flowering in Edward Hunter Reserve

2006 Sept 30 " " Senenis Track.

2006 Oct 16 " " Circumpicans - henan - Ralph Lacy

Key to Caladenia carnea.

1 Caladenia leaf pubescent petals ~~to~~ not longer than sepals. 2
2 Perianth segments acute or obtuse ~~at~~ base of column w/o a
2 pair of sessile glands Section Cabladenia. 3
Perianth segments drawn out into long narrow tips sometimes
glandular tails or clubs; base of column usually with
2 sessile yellow glands Section Calonema 22
3 Flowers pink, white, purplish or greenish. 5
5 Labellum tip acute or obtuse but not elongated, not with
dark congested calli. 6
6 Dorsal sepal hooded over column 16
6 Dorsal sepal erect or somewhat incurved (not hooded) 7
7 Leaf linear 1-3 mm wide, labellum with 2-4 more or less
parallel rows of calli from base to near tip 8
8 Labellum lamina not barred, tip of mid-lobe orange to
orange-yellow. C. aurantiaca + C. catenata.
8 Labellum lamina barred with red or purple, tip of mid lobe
yellow or red. 10
10. Flower opening normally; labellum mid lobe entire or with
short teeth or calli; perianth segments 5-20 mm long 11
11 Labellum with prominent, stalked orange glands on either side of
midlobe C. alata
11 Labellum w/o such pair of glands 12
Perianth segments 5-8 mm long lateral sepals less than 3 times
as long as broad. (Labellum about 5mm long) C pusilla
12. Perianth segments 8-20 mm long, usually more than 3 times
as long as broad 13.
13 Lateral lobes of labellum protruding forward & embracing column,
exterior of perianth segments generally brownish all over; dry
forest mainly north of Great Dividing Range. C. fuscata.
13. Lateral lobes of labellum hardly protruding forward & not tightly
embracing column. outside of perianth segments greenish, pink
or with central brownish band. 14
14 Leaf usually less than half as long as flowering stem, dorsal
sepal erect, lateral lobes of labellum almost twice as long as
wide C. carnea

14. Leaf reaching flowers; dorsal sepal incurved; lateral lobes of labellum about as long as wide. 15

C. Clarkiae – Lateral lobes of labellum fringed with 7 calli on mid lobe
Dorsal sepal hooded
Three varieties of C. carnea but only C. carnea var carnea recorded for this area.

Bon — Your Caladenia no. 169.
CALADENIA CARNEA
Not
Det. by Dean Rouse of this dept.
He's reliable but a bit untidy

Caladenia pusilla.

pusilla has rounded ends to both sepals and petals.
lateral sepal often partly joined

ie pusilla.

this plant

pusilla small dorsal sepal often covering column (hooded not erect).
pusilla nearly always mark
-pusilla generally single head and very short ie 5cm.

This plant is a small pale variety of Carnea, or ~~these~~ is actually very similar to C. carnea var. C. in Bates books. Plate 31

Maybe what they call C. carnea var minor in the part ✱ not C. minor is distinct from what ~~others~~ Some authors have called C. carnea var minor.

Det. by D. Rouse, 6 Nov 1991.

DEPARTMENT OF BOTANY

LA TROBE UNIVERSITY
BUNDOORA CAMPUS

12th September, 1991

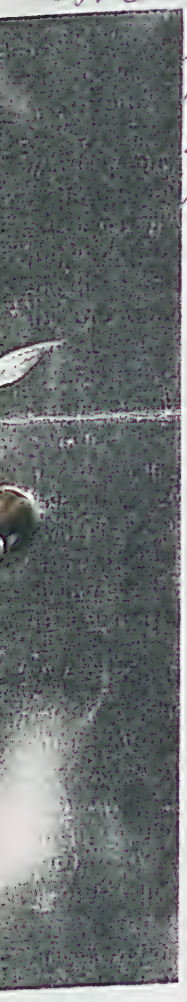
Mr. Peter Curtis,
P.O. Box 465,
Wangaratta, Vic., 3677

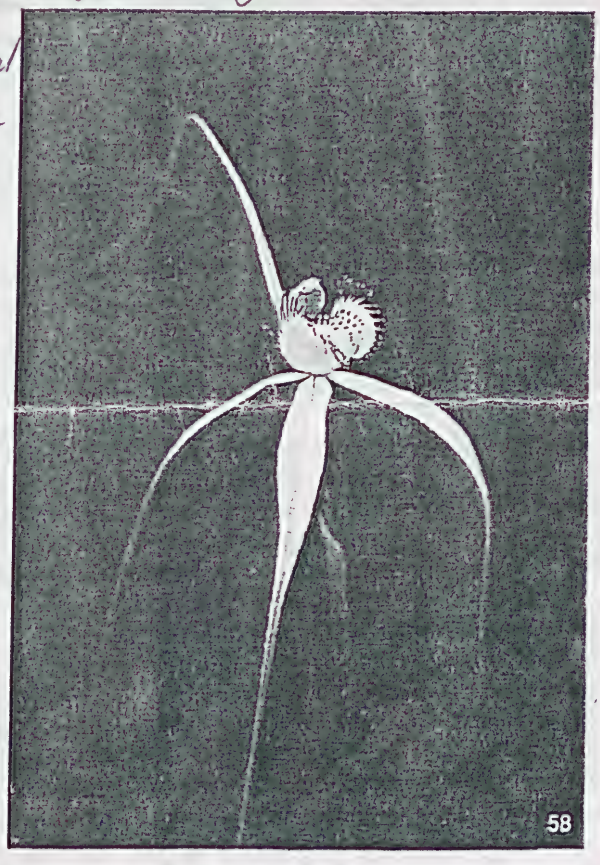
Dear Mr. Curtis,

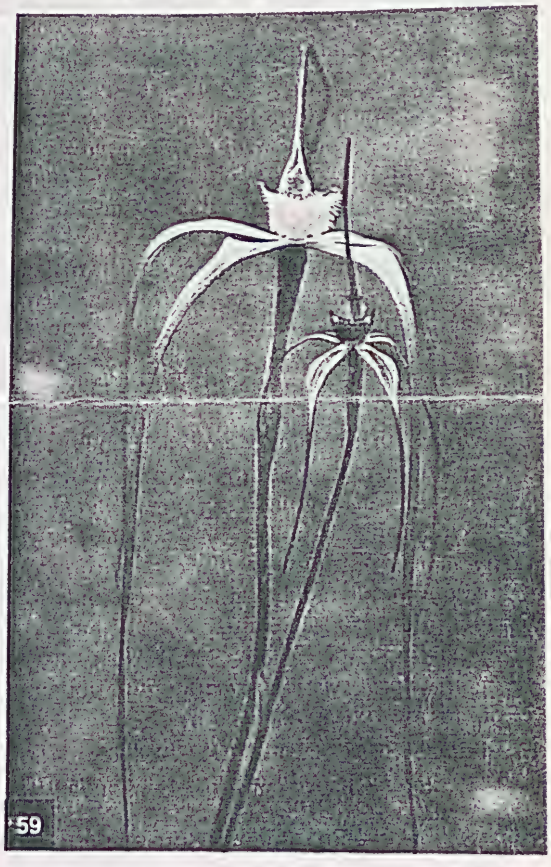
Enclosed is a copy of a memorandum from the School Executive Officer of Biological Sciences indicating the approval of your candidature for an M.Sc. degree at La Trobe University should you so wish.

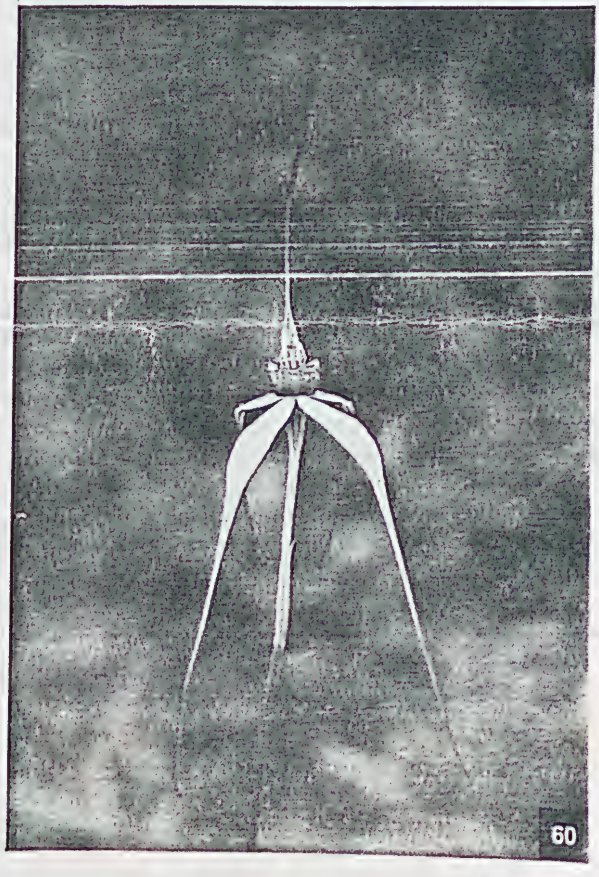
I have requested grad[illegible]es to forward the necessary application f[illegible] you and they should arrive soon.

Caladenia found near Chester Pass roadside that we thought may be C. pusilla because of the reclined dorsal sepal & glandular hairs on sepals & ovary. but am satisfied that it C. carnea var carnea.









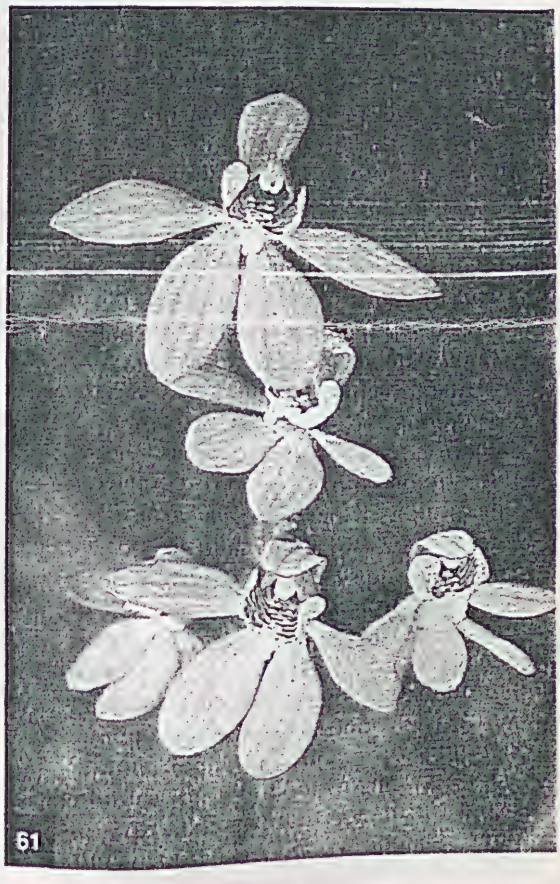


Plate 58. The commonest form of *Caladenia patersonii* is the one with cream coloured, unscented flowers, with a short labellum fringe. This one was photographed at Moonta.

Plate 59. Two unnamed species at present referred to as "*C. patersonii*" in the broad sense. [Large flower-Kapunda, small flower-Bordertown].

Plate 60. *Caladenia* aff. *patersonii*. This species has pale sepals and a red labellum. The flowers have a musty fragrance. Photographed in the Adelaide Hills.

Plate 61. *Caladenia pusilla* often forms small clumps such as this one on Fleurieu Peninsula.

Bridal creeper (*Myrsiphyllum asparagoides*) in Australia and developments towards its biological control

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[2]CSIRO Biological Control Unit, Zoology Department, University of Cape Town, Rondebosch 7700, South Africa.

Summary

The distribution, importance and control options for bridal creeper (*Myrsiphyllum asparagoides*) in Australia are reviewed. Bridal creeper is widespread in south-west Western Australia and has been recorded on 17 areas of public lands including nine National Parks. The weed is also present in nature conservation areas in South Australia and Victoria. The spread of bridal creeper in areas of native vegetation is regarded as a threat to nature conservation values. Consequentially, bridal creeper has been approved as a target for biological control. Preliminary results are given of a survey of fauna and diseases attacking bridal creeper in its native habitat, southern Africa. Potential biological control agents include eurytomid seed wasps; larvae of fruit-feeding Lepidoptera; a rust fungus, *Puccinia myrsiphylli*; a *Crioceris* sp. (Chrysomelidae), that eats new shoots and young leaves; a leaf-feeding cicadellid and an unidentified fly that galls shoot tips.

Introduction

Bridal creeper (*Myrsiphyllum asparagoides* (L.) Willd.) is native to southern Africa and has been present in Australia since at least 1871 (Kloot 1986). Recently concern has arisen because the plant is considered a threat to native vegetation. Information on the biology and distribution of bridal creeper has only been reviewed for South Australia (Cooke and Robinson 1990). In this report we summarize information on the distribution of bridal creeper in Australia with particular emphasis on Western Australia. We also consider control techniques including developments towards the biological control of this weed.

Taxonomy

M. asparagoides is in the family Asparagaceae which was previously included in the Liliaceae (Dahlgren *et al.* 1985). Three genera, *Asparagus*, *Myrsiphyllum* and *Protasparagus* are currently recognized in the family (Obermeyer 1983). Prior to this, all species were regarded as members of the genus *Asparagus*.

Obermeyer (1984) included 12 southern African species in her revision of the genus *Myrsiphyllum*. Of these, 10 are restricted to the winter rainfall area of southern Africa and only two species extend northwards along the eastern escarpment of southern Africa. The only species that is found naturally beyond southern Africa is *M. asparagoides* which extends north to tropical Africa (Obermeyer 1984). Three *Myrsiphyllum* spp. species: *M. asparagoides*, *M. declinatum* (L.) Oberm. and *M. scandens* (Thunb.) Oberm. have established in Australia (Clifford and Conran 1987).

Sixty-seven species of *Protasparagus* have been described for South Africa (Obermeyer 1985). Many species outside South Africa that are currently contained in the genus *Asparagus*, need to be transferred to the genus *Protasparagus* on the basis of Obermeyer's criteria. Most of these species occur in Africa and Asia. One species, *P. racemosus* (Willd.) Oberm. extends from South Africa across Africa and Asia into northern Australia. It is the only species in the Asparagaceae native to Australia. Four other *Protasparagus* with distributions which include southern Africa: *P. africanus* (Lam.) Oberm., *P. densiflorus* (Kunth) Oberm., *P. plumosus* (Baker) Oberm. and *P. virgatus* (Baker) Oberm., are naturalized in Australia (Clifford and Conran 1987).

By Obermeyer's (1983) criteria, the genus *Asparagus* is limited almost exclusively to Europe. It includes crop asparagus, *Asparagus officinalis* L. which is also naturalized in Australia (Clifford and Conran 1987). Dahlgren *et al.* (1985) state that *Asparagus* and *Protasparagus* together comprise approximately 300 species.

Biology and distribution of bridal creeper

M. asparagoides is a perennial climber or scrambler with green, thin, wiry, twisting stems reaching 6 m in length. Subterranean tuber masses occur at the base of the stem and consist of cylindrical branching rhizomes surrounded by numerous fusiform root tubers. Cladodes are shiny-green and vary considerably in size (10–70 x 4–30 mm) and shape (broadly ovate to lanceolate). Flowers are borne singly on pedicels and are small, white and sweetly scented. The ripe berries are red and succulent and contain 1–9 seeds (Obermeyer 1984, Clifford and Conran 1987, Kleinjan unpublished data).

In regions with a Mediterranean-type climate, bridal creeper has above-ground growth from autumn to spring. Over summer the plants aestivate as underground stems and tubers. In summer-rainfall areas, above-ground parts grow actively in summer and the above-ground parts of the majority of plants senesce in winter. In regions with year-round rainfall, plants produce above-ground growth throughout the year, possibly as successive cohorts of stems.

M. asparagoides is widespread in South Africa and is recorded from Namibia and further north to tropical Africa (Obermeyer 1984). The plant is not known as a weed or 'problem plant' in southern Africa (Wells *et al.* 1986). It is also known from New Zealand, where it has been recorded as sparingly naturalized (Healy and Edgar 1980). It also occurs in the Azores, Portugal, and Sicily (Valdes 1980) without being considered a weed. In Australia, *M. asparagoides* is found in Western Australia, South Australia, Victoria and New South Wales (Clifford and Conran 1987). The plant is not established in Tasmania (Buchanan *et al.* 1989), where it is listed under the *Noxious Weeds Act* 1964 as a prohibited weed and cannot be imported or moved within the State.

Bridal creeper in Western Australia

The earliest record of *M. asparagoides* in Western Australia is the description of the synonym, *Elachanthera sewelliae* F. Muell., based on a specimen from Nickol Bay (Mueller 1886, Clifford and Conran 1987). Nickol Bay is in the Pilbara Region near Dampier and Karratha and at least 1250 km from present day populations of *M. asparagoides* in the south west of the state. A more recent survey of plants on the Burrup Peninsula, which forms part of the coastline of Nickol Bay, did not find bridal creeper (Blackwell *et al.* 1979).

The plant was not included in Gardner's (1925) list of naturalized species of southern Western Australia. The earliest record of bridal creeper for this region is McArthur (1956) who lists the plant as present on Garden Island. The earliest specimen from a naturalized population of bridal creeper was collected in 1960 from Israelite Bay. These records suggest that naturalization of bridal creeper in Western Australia occurred between 60 to 30 years ago given that the plant's presence at Nickol Bay has not been confirmed this century.

Other records suggest that the distribution of *M. asparagoides* is increasing in south-west Western Australia. McArthur (1956) did not mention bridal creeper in his description of the vegetation communities of Garden Island. In a subsequent

Dean Rose

ORCHIDS
OF
SOUTH AUSTRALIA

by

R. J. Bates, B.Sc. and J. Z. Weber, M.Sc.

THE FLORA
AND FAUNA
OF SOUTH
AUSTRALIA
HANDBOOKS
COMMITTEE

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7 December 1990

As 'Secondary Weeds', *Cortaderia* infestations could be dealt with at the discretion of Weeds Inspectors so that control efforts could be concentrated on the most significant infestations. In addition, where innocuous forms of pampas grass were present in ornamental plantings and windbreaks, control did not have to be enforced (c.f. a 'Noxious Weed').

As 'Prohibited Weeds', importation of *Cortaderia* spp. into the State and movement within the State were prohibited. This provision also prevented the propagation and sale of *Cortaderia* spp. Local nursery industry representatives were consulted before the declaration and did not object to the proposal.

2. Priorities for pampas grass removal were assigned to different land-use areas.
Within State forests and National Parks the aims were to eradicate and maintain total exclusion of all *Cortaderia* spp. This latter aim required the enforced control of pampas grass on private land adjacent to State reserves where it posed a threat.

On all other Crown Land and Government controlled land such as road easements and riparian reserves, pampas grass was to be removed wherever feasible, especially where plants may have served as pollen or seed sources.

On rural properties, especially where pampas grass removal would cause significant financial losses, removal was encouraged by the use of assistance packages. For qualifying landholders, the Forestry Commission advised on suitable replacement species and provided discounts for their purchase.

In urban areas, control was not enforced unless the particular plants were observed to pose a threat to adjacent land or the local government authority concerned decided to implement an eradication scheme. The publicity campaign described below resulted in the voluntary removal of most pampas grass plants in urban ornamental plantings.

In all cases, where flowering plants could not be dealt with immediately, flowering stems were removed and destroyed. The parent plants were then treated at a later time.

3. A publicity campaign utilizing print, radio and television media was initiated.
Two publications were produced with funding from the Forestry Industries Association of Tasmania, herbicide manufacturers and the State Government. Fifty-three thousand copies of a small, general information pamphlet were distributed widely through plant nurseries, local councils, Government agencies and organizations involved in bushland conservation. In addition, three thousand copies of a technical brochure were distributed to appropriate companies and organizations.

The novelty value of the story regarding the sudden change of status of pampas grass from a commercially sold plant to a 'noxious weed' attracted wide coverage by the media. This was of great significance in initiating the voluntary removal of pampas grass on private land. The publicity also favourably coincided with increasing community interest in 'environmental weeds'. Seminars on the pampas grass problem were provided for local and State Government agencies and interested organizations.

4. Voluntary labour from community organizations was enlisted for the removal of pampas grass from bushland.
In most cases, the volunteers were supervised by experienced personnel from the Forestry Commission or the Department of Parks, Wildlife and Heritage. In one major exercise, 6,000 plants of *C. richardii* were removed by bushwalkers and other volunteers from the World Heritage Area and surrounding areas.

5. A State Co-ordinator for the pampas grass control program was appointed to oversee the implementation of the Pampas Grass Working Party recommendations.
Such a position was existent between 1987 and 1990. It was jointly funded by several Government Departments and located within the Forestry Commission.

The success of the Tasmanian program

Within two years of the commencement of the pampas grass control program, many thousands of pampas grass plants had been removed or treated with herbicide. All plants found near or in conservation and forestry areas had been controlled and ornamental plantings on roads and around Government buildings were removed. In addition, many plants had been voluntarily removed from private gardens and rural land and most local government authorities were undertaking control on land under their jurisdiction (Duckett 1989).

Despite this high level of initial success, pampas grass plants are still widely distributed throughout the State, principally as ornamental plantings in home gardens and as windbreaks in rural areas. In addition, the recent establishment of seedlings has been observed both in areas where mature plants had been controlled and, to a far lesser extent, in new areas.

The publicity campaign to encourage voluntary removal of plants is continuing. In addition, spot treatment of isolated plants by weeds inspectors, and enforced control of larger infestations by landowners are being undertaken to control *C. jubata* and any plants of *C. selloana* which show a propensity to spread. For the longer term, resources are being directed at the eradication of *C. jubata*, *C. richardii* and all pink-flowering forms of *C. selloana* (to avoid confusion with *C. jubata*).

Future options for the campaign are:
a) Eradication of all *Cortaderia* spp.
b) Eradication of all *Cortaderia* spp. except for white-flowered, female plants of *C. selloana* (this would enable ornamental, windbreak, soil stabilization and stock fodder uses of pampas grass to continue without the threat of spread as no pollen source would be available).
c) Control of all *Cortaderia* plants where they threaten adjacent forestry or conservation areas or where they show a propensity to spread.

These options are listed in decreasing order of resource requirements. The option chosen will depend principally on the future resource availability for the campaign. The above options are also relevant for other States considering action against *Cortaderia* spp.

Control methods for *Cortaderia* spp.

Mechanical control
Mechanical removal is often the most appropriate control method in urban and bushland areas, especially for small plants. However, in bushland, site disturbance must be minimized to prevent re-invasion.

Hand-grubbing of small plants and the use of an excavator or backhoe for the removal of large plants has been highly effective for all *Cortaderia* spp. in Tasmania (Duckett 1989, Harradine personal observation). For large plants, removal of topgrowth by brushcutter or burning will facilitate access to the crown and roots for grubbing.

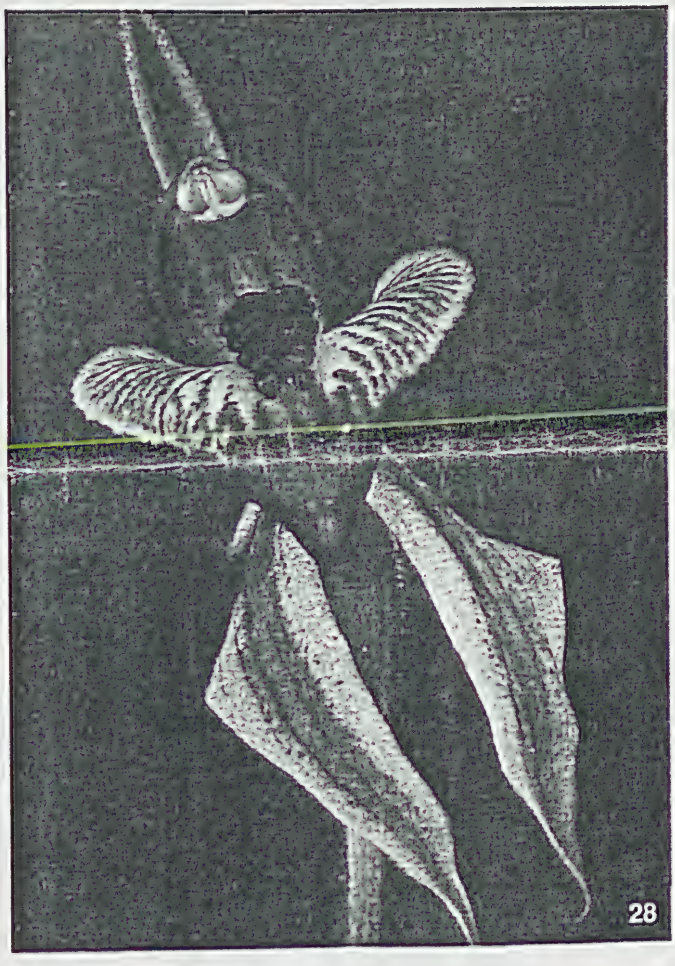
While complete removal of the roots has been recommended to prevent regrowth (Hall and Dellow 1987), Tasmanian experience indicates that once the crown and top section of the roots have been removed, regrowth from the remaining roots is unlikely.

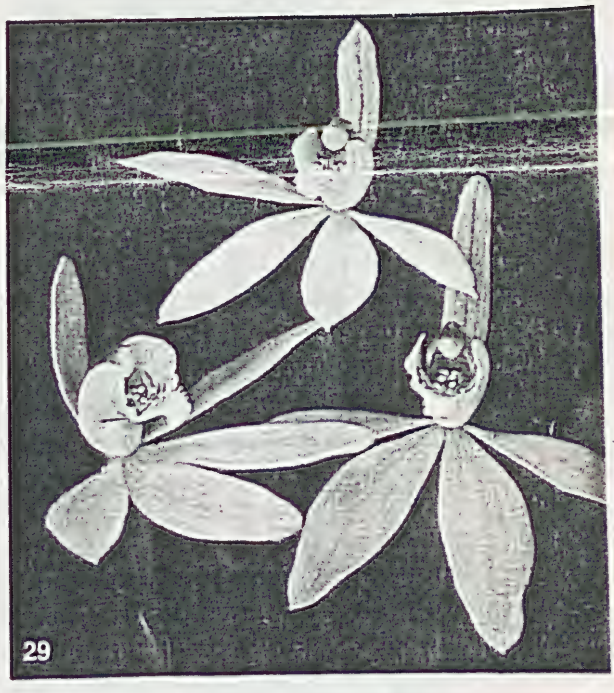
Grubbed plants should be removed from bushland areas and destroyed. Plants left lying on the surface may take root and reestablish if the soil is moist (Hall and Dellow 1987).

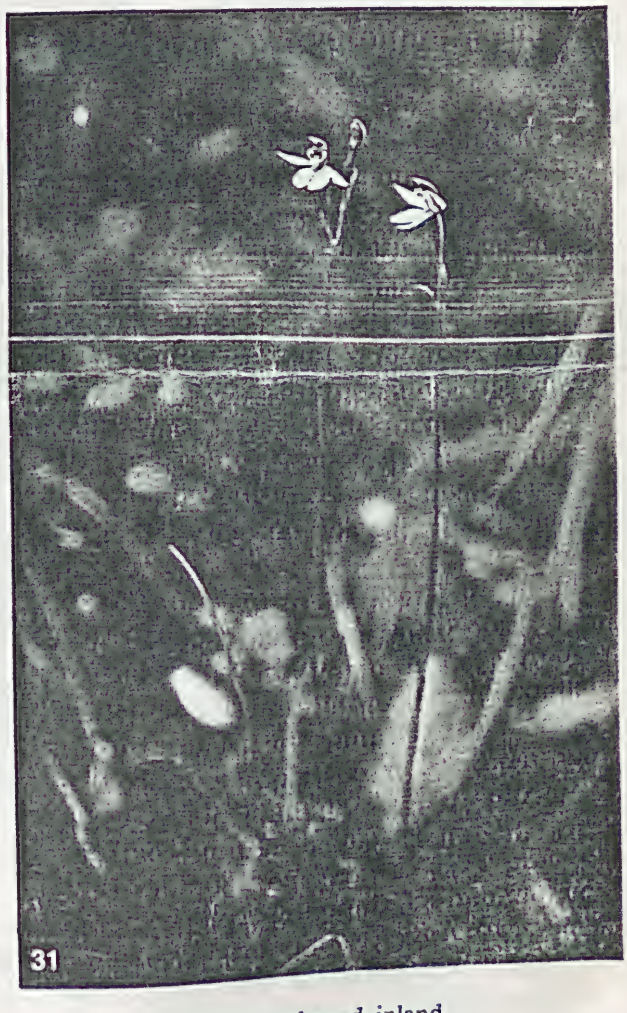
Inflorescences should be cut from plants and bagged for later destruction to prevent seed dispersal during mechanical operations.

Chemical control
Trials have been conducted in New Zealand and California to determine suitable herbicides for control of *C. selloana* and *C. jubata* (e.g., Costello 1986, Saville *et al.* 1986, Davenhill 1988). Effective herbicides are clethodim, glyphosate, haloxyfop, hexazinone and imazapyr.

Local experience indicates that glyphosate and hexazinone are effective for control of the above species in Tasmania (Duckett







Yours is probably this

Plate 28. *Caladenia cardiochila* from Minnipa, Eyre Peninsula. This is the deeply coloured inland form.

Plate 29. *Caladenia carnea*. This group from southern Yorke Peninsula shows the typical range of colours.

Plate 30. *Caladenia carnea* var. *B* unusual form from the southern Flinders Ranges.

Plate 31. *Caladenia carnea* var. *C* from Fleurieu Peninsula, showing the very small dull flowers of this form.

survey (McArthur and Bartle 1981), *M. asparagoides* dominated the undergrowth in some stands of *Acacia rostellifera* Benth. scrub and the plant was sufficiently abundant for its presence to be mapped in the vegetation survey of the island. The southern end of the island now has a heavy infestation of bridal creeper (Scott, unpublished data) in regions where the plant was not mapped as present by McArthur and Bartle (1981).

M. asparagoides is the dominant understory species in parts of Kings Park, an area of semi-natural vegetation in central Perth (Scott, unpublished data). It was not recorded in Kings Park by Baird (1977) despite her specifically mentioning introduced weeds. Keighery (1989) found *M. asparagoides* in two out of 100 sites surveyed in *Banksia* woodlands between Mandurah and Moore River in south-west Western Australia. Other nature conservation areas where bridal creeper has been recorded are: Bold Park (Keighery *et al.* 1990), Fitzgerald River National Park (Anon. 1991) and Yanchep National Park (Anon. 1989). A further eleven areas of public land in south-west Western Australia contain bridal creeper (Keighery 1991 personal communication). Information on herbarium sheets indicates that bridal creeper occurs in a variety of habitats, including coastal heath on sandy dunes, *Eucalyptus* woodlands, roadsides, creek and river banks and swamps.

Two studies have recorded aspects of the plant's biology in Western Australia. Fox (1984) measured the abundance of *M. asparagoides* in *Acacia* thickets and Tuart (*Eucalyptus gomphocephala* DC.) woodland at Woodman Point and found between 0.2 and 3.3 bridal creeper stems m^{-2}. He also compared the germination of *M. asparagoides* with the native *Clematis microphylla* DC. (Ranunculaceae) and showed that a greater proportion of bridal creeper seed was viable and germinated at a higher temperature.

A study by Bell *et al.* (1987) of grazing by tammar (*Macropus eugenii* Desm.) on the vegetation of Garden Island shows the potential impact of herbivores on bridal creeper. They found that bridal creeper formed a significant part of the diet of the tammar. In an exclosure experiment (at Beacon Head), where the vegetation was protected over two years from grazing, the mean percentage cover by *M. asparagoides* in quadrats inside the exclosure was 78.9% in contrast to 1.8% in quadrats exposed to grazing. In July 1991 this exclosure site was not fenced. A mat of dead tuber masses was present and the few bridal creeper stems apparent were amongst other vegetation and exposed stems were cropped, probably by tammars (Scott, unpublished data).

M. asparagoides is not subject to noxious weed legislation in Western Australia. However, the potential of bridal creeper to invade areas reserved for nature conservation has been recognized in the management plans of important nature reserves such as the Fitzgerald River National Park (Anon. 1991).

Bridal creeper in South Australia

Cooke and Robertson (1990) reviewed the distribution, biology and control of bridal creeper in South Australia. The plant was introduced in 1871 (Schomburgk 1871 in Kloot 1986) and the first herbarium specimen was collected in 1937. It is proclaimed under the *Pest Plant Act* 1975 in schedule PP4 – which lists major threats to native flora. Bridal creeper is widespread in South Australia including the southern Eyre Peninsula, Yorke Peninsula, Kangaroo Island and the Riverland (Cooke and Robertson 1990). It is established in dry sclerophyll open-forest, *Eucalyptus* woodland, mallee, *Callitris* forest and on coastal dunes (Cooke and Robertson 1990). Bridal creeper is also regarded as a major threat to the conservation of roadside vegetation (Lewis 1991).

Bridal creeper in Victoria

The earliest herbarium record for Victoria is 1943 (Clifford and Conran 1987). Willis (1962) noted that bridal creeper was 'established in a few sandy, coastal habitats (Torquay, Queenscliff, St Leonards, Frankston, Deep Creek at Bulla, Lakes Entrance)'. Anon. (1976) identified bridal creeper as an important weed of public lands in Victoria and present (out of the 15 areas examined) in the Little Desert National Park and on the Mornington Peninsula, including Cape Schanck Park (now included in Nepean National Park). Beauglehole (1988 and earlier references listed within) recorded bridal creeper from public lands on 48 of the 152 sections included in the 13 regions examined during his survey of the distribution of vascular plants in Victoria.

Bridal creeper in New South Wales

Jacobs and Pickard (1981) list bridal creeper as present on the central coast, southern parts of both the western slopes and western plains of New South Wales and on Lord Howe Island.

Control techniques

Techniques for cultural control of bridal creeper include slashing or mowing the foliage, digging by hand and fire. Cutting of foliage is probably best carried out in autumn prior to fruit and new tuber formation, but the frequency required to exhaust underground reserves is not known. Digging up rhizomes and tubers can be effective in small areas (Overton 1989) and it is essential to remove the growing ends of the rhizome, usually indicated above ground by the presence of stems. Fire can be used to destroy autumn growth, but fire should be followed with herbicide treatments to prevent further spread of the plant (Twentyman 1990).

Herbicides used for *M. asparagoides* include 360 g L^{-1} Roundup (glyphosate) at rates ranging from 100:1 to 200:1, Brush-off (metsulfuron methyl) at 10 g 100 L^{-1} and a paraquat/amitrole/MSMA mixture (Cooke and Robertson 1990, Robinson 1990). Bromacil and amitrole were less effective against bridal creeper (Schrank 1982 in Cooke and Robinson 1990). Control can take from three years (Cooke and Robertson 1990) to six years (Robinson 1990).

The control technique with the greatest potential benefit in conservation areas is biological control. Classical or inoculative control, which is the introduction of host-specific, exotic natural enemies (usually insects or fungi) adapted to exotic weeds (Wapshere *et al.* 1989), is readily applicable to weeds of conservation areas. The Australian Weeds Committee has approved *M. asparagoides* as a target for biological control, and a preliminary survey for biological control agents started in 1990 (Kleinjan and Scott 1990).

Survey for biological control agents

The survey for biological control agents encompasses the southern African range of bridal creeper, but is concentrated in western and southern Cape Province as these areas are climatically similar to areas with bridal creeper in Australia. Five study sites have been established in southern Cape Province. One site has been established in western Cape Province. Each site contains 20 randomly chosen bridal creeper plants. The southern cape study sites are visited at three-monthly intervals since bridal creeper has active above-ground growth throughout the year. The western Cape study site is visited at two-monthly intervals from about May, when the plant starts above-ground growth, through to October when the plants are fruiting.

Populations consisting of at least 20 bridal creeper plants were surveyed once at 10 localities in the Drakensburg mountain range during either January or February 1991. Plants in this summer-rainfall region are actively growing during the summer months. Fruiting and subsequent senescence of above-ground growth occurs towards the end of the summer.

Bridal creeper has been recorded in the arid West Coast zone of South Africa (Obermeyer 1984). To date we have not found populations of the plant in this area.

The objectives of the survey are to provide a comprehensive list of the fauna and diseases associated with bridal creeper and to determine the level of specificity of

Caladenia (Alba) catenata

1966 Aug 27th Stem about 4"-5" long with bud
Sept 18th Flowering in Reserve
1967 Sept 17 Flowering in Reserve.
Sept 23 Flowering along Blackwarry Scenic Rd. Very variable in colour esp. labellum. Also found 2 flowers on 1 stalk
Oct 7 Flowering in A.P.M. reserve. A beautiful pink specimen flowering. Also found all white ~~plant~~ specimen including column and column wings white. Labellum tip pale yellow. Calli white? Many flowers very variable. Found 1 labellum lobes deep red.

Scape: Approx 6" high, 1 stem bract stem clasping + 2 ½" cm.

Dorsal Sepal: 2 cm white or pink, band of thin red on centre of back of sepal. Sepal bent back from ovary + then up making almost semi-circle

Lateral Petals + Sepals: 2 cm long, broadest at centre, rounded at point, horizontal, evenly spaced. All have red stripe.

Labellum: Bends back like dorsal sepal + then forward making more than semicircle. Tip of labellum turned under a orange point often hidden underneath. Centre lobe finely fringed. Two rows of white cali small but definitely stalked. Lateral lobes very high - half length of centre lobe - forming tube with wings of column. Labellum approx 8 mm long. Group of yellow cali right at base of labellum

Column: Curved thin white for first half + then deep maroon, definite line at join of two colors. Maroon part winged greenish red.

Pollenea. at top of column and disc just underneath.
Ovary: 1 cm long.
Some specimens maroon part of column striped with white horizontally. Max found one striped vertically. Pink specimen not different only darker in color.
White variety still with orange tip and slight green marking on column.

1968 Sept 22nd Flowering in A.P.M. reserve. Beautiful specimens all shades to very deep pink. This is variety Picta.
Oct 5th Still flowering but flowers ruined by hail.
" 13th Found white C. Carnea only color was red stripes on Column. and C. Angustata was also white without any color yet. C. alba had usual color on column & back of dorsal sepal was dark red too.
Sept 18th Flowering in A.P.M. reserve.
1970 Sept 19th " " A.P.M. reserve. Lovely big specimens both pink ones & white ones.
Oct 15th Found specimens flowering in T'gon Sth School on excursion with school children that we think is Caladenia alba. because it had a green column and all the rest of the flower was white except for the faintest tinge of pink on the outside of the lateral lobes of the labellum the golden tip to the centre lobe. Have sent specimen to the herbarium.

1971 Oct 10th Beautiful specimens of V. picta flowering in A.P.M. reserve.
" 24th Flowering in area at Reid's Corner.
" 27th Both varities flowering close together in T'gon Sth Reserve.

Caladenia (Alba) (cont). cantenata.

1978 Oct Many plants of C. alba var picta on corner of Napier Rd and Dogtrap Road Wan Ulron Forest These plants varied from white to very deep pink Sent specimens to Herbarium for identification verification

Nov. 2nd Flowering along Anzac Rd. Mullungdung. Forest.

1976 ~~Nov~~ Oct 11th Recorded with Dr. Parsons for T16.

2001 July 11th looking at Pictorial Guide to Wild Orchids of Victoria I would suggest that slides 1090, 1032, 1033, 4575 are all Caladenia catenata

I would suggest 2033 & 2032 are C. sp. aff catenata as they have the green column.

Nov 3 Flowering in Newborough Bush.

Dec 5 " " Bob Johnson's Bush near Sandy Ck. Newborough.

2003 Oct 25 Flowering along Anzac Rd & Big Tower Road in Mullungdung. Both forms red column & green column flowering. Some flowers pink.

Caladenia catenata. P3.

1990/1 Oct 12 Flowering at Mt Heddrick

Caladenia clarkiae. (after Ruth Clark)

1991 Sept. 9th Flowering at parking area on the Captain Creek Track at Mallacoota.

1991 Sept 10th Flowering in bush near power lines on Genoa Creek Track at Mallacoota.
Allie photographed these plants.

2003 Oct 25th Flowering on Anzac Road & Big Tower Rd, Mullungdung. 2 flowers on one stalk.

Caladenia clavigera

1969 Nov 8th Flowering at Wilson's Prom. at Rubbish Tip.

Scape: app. 1ft. Stem very hairy.
Leaf - big about 2½" long and extremely hairy.
Flower - Honey colored with maroon markings.
Horizontal

Dorsal Sepal: All sepals short compared with most spiders
Erect with long thin club on filiform point

Lateral Petals: Shorter + broader than sepals but still with filiform point - no clubs.

Lateral Sepals: Longer than lateral petals with smaller to l clubs on filiform points.

Labellum: With fleshy appearance - erect before turning to give a tubular effect. - very wide brown colored - rolled at apex to give pointed effect. Glands in 4 rows - very clubbed. Glands red on main part of labellum - lighter towards back and maroon towards tip.

We did one double headed stalk. Flower is horizontal.

Caladenia congesta.

1969 Jan 1st Flowering along Senini's Track.

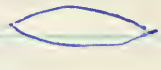
Flower: Bright Pink.

Scape: 1 ft.

Stem: Hairy, green, no leaf bract.

leaf: 5 inches $\frac{2}{3}$ withered at flowering time, straplike & hairy.

Dorsal Sepal: hooded 1.5 mm, hairy on upper surface.

Lateral Petals & Sepals: All similar, same length as dorsal sepal - horizontal spreading  greyish pink - hairy underneath.

labellum: 3 lobed. making pitcher with hood like iridescens.

lateral lobes about half length of labellum & pink.

Front half of labellum covered with deep red glands & curved under spotted here red

Column: half height of dorsal Sepal easily visible above tongue.

Specimen with 2 flowers.

Ovary: 12 mm green, hairy, not noticeably ribbed but slightly.

Second specimen bigger. Only 3 specimens.

1969 Dec 15th Flowering along fence of Bush Paddock. Norm Thompson found specimen.

Caladenia Dilatata (Spider)

1966 Oct 3rd. Flowering opp. O. Lades.
Scape: 31 cm / stem brac - / stem hairy.
Dorsal Sepal:- 4 cm straplike + tapering, red vein down middle. Erect + incurved.
Lateral Petals:- 2.5 cm straplike + tapering, red vein down middle. Recurved.
Lateral Sepals:- 4 cm red vein down middle. 4-5 mm wide - at base + continuing so halfway, suddenly incurving fine for second half. Crossing each other.
Labellum:- 1 cm wide. 1.5 cm long, mainly cream tapering to blunt point, recurving. Red blotch at end of labellum + 1mm back. 4 rows of deep red cali the full length to red blotch, very long stalks at back, short at front. Margins green + deeply fringed.
Column:- 1.2 cm incurved winged with transparent wings, very pointed, red spotted, two white long callosities at base of column on red circle.
Leaf:- 11 cm straplike + hairy.

1967 Oct 2nd Flowering above our track
Oct 22nd Found flower with 2½ labellums. First two labellums complete but third one with just half width, one row of cali and filiform point on end. Also seed on some plants

1968 Oct 29th 27th Flowering in A.P.M Bush, + at Reid's Corner. large specimens 2' across.
Nov 10th Flowering past Shingle Cr. Reserve. Also found many plants with double heads (8). along Clarke's Rd.

1969	Oct 12th	Flowering	Tynong North
	19th	"	Shingle Ck Res.
	Nov 2nd	"	at Cowwarr
	Nov 8th	"	" Wilson's Prom. Heathlands
1970	Oct 11th	"	" Heyfield
1971	" 12	"	" O. Lades.
	24th	"	" Reids Corner
1994	Oct 28th	"	" Tgon Sth Reserve
1995	" "	"	" Wonthaggi Heathlands
1990/1	" 12	Mt Heddrick	
1996	Nov 23rd	Old Port Trail, Nooramunga Coastal Reserve.	
1999	Oct 30	See Caladenia phaeoclavia since C. dilatata has been divided into several species	

(2001 July 11th Traralgon Sth. ← Think slide 660 could be C. phaeoclavia Brown-clubbed Spider Orchid because of white on labellum - glands not much into red area + dorsal sepal with club + also erect.

Probably Cowwarr — Slide 713 could be C. tentaculata - Manti's Orchid with its very long sepals, long marginal teeth on labellum, very wide lateral lobes on labellum + yellowish clubs.

Perhaps haberleuchte — Slide 1095 can't see enough detail to be sure but probably C. phaeoclavia

Perhaps Tgon Sth. — Slide 1391 is probably C. tentaculata because of glands on top of labellum.

" on locality. " — Slide 2375 is also probably C. phaeoclavia.

Caladenia fitzgeraldii

2003 Nov. Flowering in Edward Hunter Reserve. This specimen appears to key out in Flora of Victoria Vol. 2 key. It comes within the C. reticulata group of 12 species.

Lateral lobes of labellum not green; Sepals less than 5cm long with fine clubs; petals with no clubs. Labellum longer than wide, sepals with clubs more than 2mm long (ours about 7.5mm.) labellum more than 5mm. wide with perianth segments spreading. Mid-lobe entirely glossy red, lateral lobes with marginal calli less than 1mm. perhaps 1.5m. Perianth segments yellowish-green with red medium stripe; labellum calli well-spaced. Think we would have called this reticulata in early days.

Caladenia flavovirens -
Flowering plant 13-31 cm tall. Leaf to 30cm long, 8-10mm wide. Flowers 1 or 2; perianth segments 3-6cm long, pale greenish-yellow, lateral sepals divergent, spreading to drooping, flattened at base, 3-5mm wide, abruptly tapered to a filiform tail (not distinctly clubbed) with relatively widely spaced, sessile glands; petals flattened at base, tapered to long acuminate apex, sometimes glandular. Labellum curved forward with apex recurved and lateral lobes erect, lamina ovate to ovate-lanceolate, obscurely 3-lobed, 14-23mm long and 7-10mm wide(when flattened), greenish-yellow to pale yellow in proximal half, maroon in distal half; marginal calli on lateral lobes linear, to 3.5mm long, those on mid-lobe shorter and more tooth-like; lamina calli in 4 or 6 rows, extending onto base of mid-lobe, narrow, foot-shaped,c.2.5mm long at base of lamina, decreasing in size towards apex. Christmas Spider-orchid. From coastal to near-coastal habitats through to low altitude mountain forest, formerly common near Portland where now rare and localized, and possibly extinct in the Lorne and Marlo areas. Distributions somewhat obscure due to confusion with *C. aestiva*. Grows among shrubs in stunted coastal scrub, often in sandy soils,or in mountain forests with a grassy understorey. Flowers Dec.-Jan. *Caladenia flavovirens* differs from all other yellowish flowered *Caladenia* species in having sepal tails not distinctly clubbed and with relatively widely spaced (not densely crowded), sessile glands.

Caladenia (Palida) flavovirens

1970 Jan 24th Flowering at Wulgulmerang.

Scape: 9 ins appo.

Leaves: Picked specimen

Dorsal Sepal: 4 cm long dark green, narrow all way with darker line down

Lateral Petals: 2.5 cm long 3mm lighter than dorsal sepal, spreading out at 90° to dorsal sepal & then down.

Lateral Sepals: 4 cm long 4-5 mm wide for 1.5 cm & then very narrow. Also at right angles but drooping quicker & deeper same color as petals.

Labellum. 1.5 cm long 1 cm wide at widest part. Toothed along margin to very tip. 4 rows of hooked cali, slightly tinged with red. Two yellow cali - large - at base.

Column: Conspicuously winged almost transparent with pollened ~~column~~ protruding from apex.

When the photograph of this orchid came back it appeared that the ends of the sepals reflected the light in a different manner to the rest of the sepal. This gave them a slightly club-like effect. Whether this was due to the fact that the sepals had turned slightly and the underneath surface was visible to the camera or whether the ends have slightly different texture, we were not able to say.

1972 Jan 30th Flowering at Mt Hewett

1989 Jan 14th " " Wulgulmerang. Photographed.

Caladenia ~~fragrantissima~~ fragrantissima. ssp. fragrantissima.

Fragrant Spider-Orchid.

1995 Oct 28th Flowering on Wonthaggi Heathlands. Identified by Terri Allen.

Caladenia fulva.

2006 Oct 12 Flowering in Grampians heran recorded by Ralph Laby.

Caladenia (Angustata). gracilis

1966 Sept 9th Plant transplanted from bush near Cochrane's last year, to reserve was found flowering. Further specimens in Bush above reserve. One plant had 3 flowers all fully opened on the one stalk.

Approx Oct 1965 these plants were flowering in bush behind Cochrane's and we found in the flowers little black flies which appeared to be dead. However after we removed one to look at the flower it revived and flew away. Unfortunately we did not keep one of these flies.

Sept 18th Flowering app. Chester park.

Sept 25th Flowering at Cowarr. One plant had very small fly right in middle of flower. Flower, with fly still inside, dispatched to Mr Muir Monday 26th.

Sept 27th Many flowers blooming in bush. Every flower had one of these flies in the middle. 3 flowers on one stalk all had flies in them.

1967 Sept 11th ~~Fla~~ Found flowering in bush behind our place. Also found four flowers on one stem

Oct 8th Flowering in H.P.M. Reserve

Scape: 15 cm maroon 2 flowers + 2 buds.

Dorsal Sepal: 1 cm well hooded over column hiding column 5mm wide.

Lateral Petals + Sepals: White above and mauve beneath 1cm by 5mm. Both at the tip curves upwards + in forming a point → petals more so than sepals.

Labellum: 8 mm curved downwards until tip almost touches underneath. 3 lobed.

lateral lobes fringed past bend to point.

Mid lobe: White cali in 2 rows
Tip of labellum purple.
Column: Conspicuously bent over under dorsal sepal
" winged white with maroon spots.
Two large conspicuous maroon spots at top of column.
Peduncle: 1 cm.
Ovary: 5 mm grooved green with red in grooves
Flower bracts: maroon sheath peduncle 1 cm long.
Stem bract: maroon 1½ cm long near base of stalk.
Leaf: 10 cm long 3 mm wide dark green, grooved in middle & red at base.

1968 Sept 22: Flowering in A.P.M reserve. These are plants transplanted here from Cochrane's [area] before clearing.
Oct 5th Still flowering as above.
13th A pure white variety of C. Angustata found flowering at Cowarr.
Nov 3rd Flowering along Semini's Track
1969 Nov 1st Beautiful specimens flowering at Cowarr. They had very strong odour almost overpowering if kept in car.
Labellum: with deep teeth, cali appear to be on stalks, lateral lobes smooth & entire.
Column: almost touching the Dorsal Sepal.
Very stout plant.
Another plant had Dorsal Sepal erect first & then curved over. Very dark on back of petals
Even found one with red horizontal marks on labellum - otherwise still same with strong odour.

~~catenata~~

Caladenia (angustata) (cont) gracilis

1969	Oct 12th	Flowering	at	Tynong North
	Nov 2nd	"	"	Cowwarr.
1970	Jan 1st	"	"	Tamboritha Saddle
1971	Nov 15th	"	"	Cowwarr.
1975	Nov 2nd	"	"	Mullungdung Forest.
1991	Sept 14th	"	"	" "
1994	Nov 9th	"	on	Licola weekend
1990/1	Oct 12	"	"	Mt Heddrick
2003	Oct 25th	"	"	Anzac Rd v Big Tower
~~2006~~	~~Sept 30~~	"		Rd. Mullungdung.
2006	Sept 30	"	"	Serenis Track.
2006	~~Oct~~ Nov 16	"	"	Grampians-henan-Ralph Laby

Caladenia latifolia

1967 Spring. Specimen from Mr Homan who collected it at Yanaki

Scape: 15 cm Hairy. Flower Pink.

Dorsal Sepal: 15 mm long and 5mm at widest part. Erect

lateral Petals: 12 mm long 4 mm wide shaped ◇

" Sepals: 16 mm " 5 mm "

Labellum: 8 mm three lobed.

lateral lobes: like ears white with red stripes on both sides 3 mm high 2 mm wide.

Mid lobe: 8 mm tapering to very fine point with 3 long white teeth on each side; lower portion pink. Cali between lateral lobes all attached to central point

Column: Winged but coming to fine point. Dark point

Ovary: 1 cm grooved green hairy. ~~Stalk~~

Stalk: up to 2 cm hairy. Both stalks from same place ovary + bract.

Flower bract: 1.5 cm at base of each ovary.

Stem bract: 2 cm very hairy, green.

Leaf: 8 cm long 1.5 cm wide many veined hairy. Underside light green hairy with ridges for veins Inclined to twist giving slightly fluted effect, coming to accuminate point

1969 Nov 8th Flowering at Wilson's Prom.

1996 Oct 12th " " Paradise Beach at 2nd pipeline

Caladenia oenochila — Wine-lipped Spider-Orchid

2006 Sept 30 Flowering at Serenis Track on right-hand side of entrance.

Caladenia parva — Small Spider-orchid

2004 Sept 25th Flowering on Clark's Road. Checked out against CD rom. Flower like plainer Green-comb Spider-orchid — tongue with less glands, labellum teeth shorter + less colourful. Short in stature.

2006 Sept 30 Flowering at Serenis Track at entrance.

Caladenia patersonii

1969 Oct 12th Flowering Tynong North Road.
Scape: 10 inches
Single hairy leaf 1½" long.
Dorsal Sepal: 1¼" long by 1 cm wide. Cream with red stripes: - erect.
lateral Petals: 1¼" long by 1 cm wide tapering to point, drooping from about ½ way.
" Sepals: 1½" long by 1 cm tapering sharply halfway - crossing over about ⅔ way down Pointing straight down - cream with 3 red stripes.
Labellum: Beautiful - maroon fringed, curved right back to touch base - stripe of white down centre - 2 cm wide 3+ cm long.
Column: very winged about 2 cm wide hooded.
1 stem bract + stem hairy.
Whole flower more drooping than C. dilatata.
One flower very deep pink color.

1970 Sept 26" Flowering at Darson Road area only one specimen but a beautiful specimen

1984 Oct 28th Flowering Lowe's Road Boolarra.
1992 Sept 9th " at Edward Hunter Reserve.
1995 Oct 28th " Wonthaggi Heathlands
2001 July 11th Using Pictorial Guide to Wild Orchids of Victoria.
I think slides 1771 2016 17614, 4852/3 are probably all Caladenia fulva because of red labellum & drooping segments.

Caladenia phaeoclavia Green-comb Spider-orchid

1999 Oct 30th Flowering at Edward Hunter Reserve.
Think this identification is correct but will send to Herbarium via Cheryle Edwards.
Key point of separation from C. tentaculata is that the petals do not have clubs and the glands at the base of the labellum are 4mm not 5mm long. Not much difference but still think it measurable. Difference is key depends on whether lateral sepals are pliant or stiff, labellum tremulous or only slightly tremulous. & whether marginal teeth extend or not past the level of the anther tip. Still hard to identify in a pressed specimen.

2003 Nov. Flowering at Edward Hunter Reserve.

Caladenia praecox — Early Caladenia

1991 Sept 14th Flowering in profusion amongst C. carnea in Mallumgdung Forest on Big Tower Road. also on Massey Road at Thelymitra matthewsii site.
I can understand how this orchid was considered a variety of C. angusta.
It is usually about the height of C. carnea.

Scape: about. 3-4" high - hairy.
Leaf: Narrow app. 2" long.
Stem bract's: One about middle of stem
Dorsal Sepal: Much curved right over column & labellum
Back surface appears to be glandular but not hairy - purple.
Lateral Sepals: app. 12mm. at right angles to stem.
White with purple tips on upper surface but streaked with dark purplish line on under surface that almost meet to give purple effect.
Labellum: Curved upwards to form tube for at least ½ of length. Lateral lobes entire but only for last quarter. Lateral lobes look like they have very little Mid lobe main part of labellum. lateral lobes could be just long teeth with gland on end & well spaced. Teeth continue down mid lobe to apex but are shorter.
Mid lobe has 4 rows of stalked calli to bend in labellum - then sessile calli covering apex but not in rows - not congested either.
Tip of labellum purple
Column: Completely hidden by labellum except for top.
Neville Scarlet verified this identification

Caladenia prolata

1995 Nov 4th Flowering along Clarkes Road 1.9km from Mattingley's Hill Road towards Church Road on the left-hand side.
Scape about 1ft high and plant keyed out without any trouble in Flora of Victoria
Sent specimen to Dr. Parsons for positive identification.

Caladenia reticulata

1969 Nov 8th Flowering at Wilson's Prom. on track down to lighthouse.

Scape: App. 15" long

Leaf: Quite big app 3" long - not very hairy.

Stem Bracts: Two - rather stem clasping.

Dorsal Sepal: 2" curved forward over flower with long club at end - mostly red.

Lateral Petals: no clubs 1¾" long and app. 4 mm wide.

" Sepals: wide for 1" then long filiform for another 1". Green where broad and red where narrow. Clubs on end almost as big as one on Dorsal Sepal.

Labellum: broad curved upwards - regularly toothed pointing forward; green at base, but red at tip or all red. - Curled under until touching base of labellum. - 4 rows of glands straplike flat with point at end ⊤ stalked. Constricted before point ⟨

Column: Conspicuously winged with almost transparent wings. Pollenea very robust, almost spherical.

1991 Oct Flowering near Goodwin Road, Mullungdung Forest.

2002 Dec In Census 2000 it is stated that C. reticulata in sensu Willis 1970 partly = C. brachyscapa

2006 Oct 12 Flowering at Grampians henan recorded by Ralph Labey

Tessellata.

Caladenia (tesselata) (cardiochila)

1969 Nov 8th Flowering at Wilson's Pram at Rubbish Tip.

Scape. app. 1ft. Stem just hairy.

Leaf: app 2" long not as hairy as clavigera.

Dorsal Sepal: very short $\frac{2}{3}$" curved

Lateral Petals: very thin $\frac{2}{3}$". - just pointed,

" Sepals: twice as wide as petals + longer - 1" long

Labellum: very pointed and heart shaped

Calli ~~be~~ stalked, glands congested, labellum free and easily moveable, all yellow or orange apex edged with maroon - some red tipped. Labellum actually shaped to a point not rolled as in C. clavigera.

Flowers can be very dark in color or light in color & spotted.

Transitoria

Caladenia Iridescens. (Bronze)

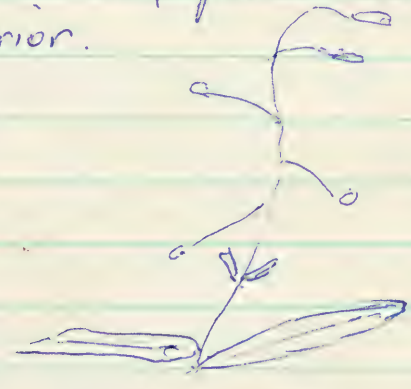
'06) Oct 22nd Found in Traralgon South Reserve.
Very tiny flower hard to see.
Scape 7 cm high no bracts except at base of ovary. Can have 2 flowers.
Dorsal Sepal: hooded with glands or irridescent spots on back approx 8 mm. greeny bronze 3 mm wide
Lateral Petals: 8 mm only 2 mm wide + tend to point up beside dorsal sepal although they do come down lower when flower first opens. more golden bronze than dorsal sepal.
Lateral Sepals: 8 mm but 3 mm wide also golden bronze Do not come to far down certainly not past horizontal.
Labellum: Three lobes almost forming tube with pink stripes across mid lobe. Mid lobe covered with dark cali in rows down labellum but congested at tip and along the margins. Marginal cali with long stems + cali look like blackberry. Wings or side lobes half way down labellum almost 2 mm wide + entire.
Column: Only bent at very top with red stripes across stalk. Slightly winged
Ovary: 1 cm long grooved bright green. Stalked but stalk covered by stem clasping bract.

leaf Straplike 10 cm long 4 mm wide with deep vein.

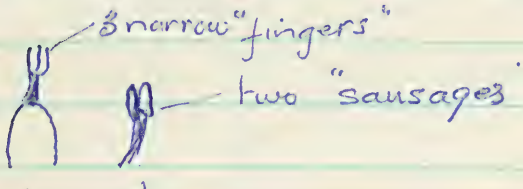
1968 - Oct 6th In bud in T'gon Sth Reserve
24th Flowering " " "
1971 Nov 12th Flowering at Reid's Corner.
1974 Nov 9. " along North/South Road in Mullungdung Forest.
1975 Oct. Flowering at corner of Napier Rd & Dogtrap Rd. Wan Wron Forest
1975 Nov 2nd Flowering on Anzac Rd. Mullungdung Forest.
1976 Nov 10th Recorded with Dr. Parsons T16 & T27
2001 July 11 Slide 1100A. may be C. transitoria as Pictorial Guide to Wild Orchids of Victoria says it grows in Southern Victoria while C. iridescens grows in Western Vic. & C. sp. aff iridescens grows in Otways.
C. transitoria has pale cream to greenish flowers, sepals 10mm. Flowers Oct. Nov. I think lateral lobes of labellum may also be more spread.
2003 Oct 25th Flowering on Anzac Rd & Big Tower Rd. Mullungdung Flowers were quite spread out for this species.
2003 Nov 1 Flowering in Edward Hunter Reserve.
2005 Oct. 29 " " Mullungdung Caladema transitoria.
2006 Nov 4 " " Springsure area.

Calandrinia calyptrata.

Dec 13th Plant flowering in pot at home. Plant collected at Boisdale in September.
Identification not verified.
leaves 1½" succulent, straplike with definite groove down middle of upper surface; ~~opposite~~ alternate on plant but two opposite small leaves on flowering stalks and 1 small bract opposite where flowering pedicel commences.
Flowering pedicels 1" long spreading to reflexed.
Petals pink 4 ring just longer than sepals.
Petals pink inside, paler outside; sepals 2 smooth
Ovary superior.



Capsule elongated, light biscuit colour, opening at top. Seed appear granular not smooth with "dots" in regular circular pattern, black & shiny. Concentric pattern of dots.



Style Stamen

1991 Oct 12th Flowering amongst rocks on Mt Heddrick. These were very short flowers with 1 flower to stem. Identified by James Turner.

1995 Oct 25 Flowering on Mt Heddrick

Calandrinia eremaea. (Twining Purslane)

1968 Oct 20th Flowering near Shingle Ck Reserve.

Nov 10th Still

Caleana Major (Duck)

1966 Oct 9th Flowering in our reserve.
30th " Rifle Range
1967 Jan 1st " in our reserve.
Sept 3rd Buds just visible at base of leaf. in our reserve.
Oct 8th Flowering in A.P.M Bush.

Scape 28 cm. 1 stem bract 1 cm very stem clasping stem red at base but merging into green at top

Dorsal Sepal: Pointing downward 1.3 cm curved around column. Brown. 3 mm wide. Boat shaped.

Lateral ~~Sepals~~ Petals: 1.5 cm at 45° from dorsal sepal 1 mm wide also curved around wings of column. Brown

Lateral Sepals: 1.5 cm pointing upwards almost vertical. 2 mm wide with 2 teeth on inside at third intervals } Brown. Appearance of wings.

Labellum: Head shaped on 7 mm strap or spring. 7 mm wide semi-spherical a hollow with 5 mm long strap in front still all brown or almost black but wings on sides of strap transparent. Strap + wings very beaklike. At rear of head another 5 mm strap which can be curved slightly or can form complete circle. Head sensitive and retracts into hollow caused by wings of column. Light causes reflexion ~~ants~~ on head which we think may attract insects.

Column: 12 mm long curved into almost semi-circle. Brown with green rostellum (?) + yellow pollinia Δ shaped at tip of ~~to~~ column. Column also pointing downwards. (Wings of column large, brown, 7 mm wide each side of column. Both wings form complete semi-circle and appearing as body of duck.

Ovary: 5mm grooved green lying close to Dorsal sepal.

Leaf: Strap like 6 cm long 1.5 cm wide green on top but maroon underneath.

Bud: 8 to 9 mm long (0) with hole in centre.

Flowers last for considerable time.

Pedicle: 5mm long with flower bract with it joins stem of plant.

We have seen 3 flowers on one scape

Nov 4th Flowering at Wolfe's swamp.

1968 Jan 12th " " A.P.M. Bush.

March 29th Many leaves have come up in the garden bed over the last 3 weeks. So far no sign of any buds. Is this the drought conditions or the fact that the weather has been warm + humid?

Oct 29th Flowering in A.P.M. Reserve.

Nov 17th " Dead Horse Gully

1969 Jan 15th " Anderson's Track

Oct 18th " Rosedale

Nov 2nd " at Briagalong.

12th " " Cowwarr.

1970 Jan 2nd " " Glormandale - Oak's Rd.

Sept 13th Plants in bud in APM Reserve

26th " Flowering " " "

Oct 11th Flowering at Heyfield

~~Nov 23~~

1971 Jan 16. Flowering in Traralgon South Reserve.

Sept 19th Many plants in bud in Whitelaw's Track area.

Oct 10th In bud at Rosedale.

Nov 13th Flowering at Cowwarr.

1984 Dec 29th " along Boolarra Road

1990 Dec 18th Flowering along Boodyarra Road 200 metre west of Grasstree Swamp Road.

1990/1 Oct 12 Mt Heddrick

1996 Nov 23rd Old Port Trail, Nooramunga Coastal Reserve.

2003 Nov 1. One plant in flower most others in bud in Edward Hunter Reserve.

* Callistachys lanceolata.
(Oxylobium lanceolatum)

1970 Jan 2nd Flowering at Tambaritha Saddle.
Creeping plant only about 6" high.
Same flowers as alpestra.

2003 Nov Name change in 3rd ed. of Census

Callistemon citrinus Crimson

1970 Jan 24th Flowering along Bruthern Road

Callistemon pallidus.

1974 Oct 28 Flowering among rock along bank of Avon River in Channel Country - Deep pink, scraggly bush.

1989 Sept 16th Plants growing right on top of Mt. Elizabeth. Not in flower

1990/1 Oct 12 Mt Heddrick

1998 Muelleria Vol 10 1997. Table of diagnostic features of Callistemon genofluvialis, C sieberi, C pallidus and C forrestense. C genofluvialis is limited to west side of Genoa River

Callistemon (Sieberi) pityoides (Alpine Bottlebrush)

1967 Feb 6th Flowering at Erica
1968 Jan 18th " " Baw Baw. Soft yellow brushes.
1970 24th " " Rocky Plains, Wulgulmerang.
1971 Jan 30 " " Howitt Plains.
1994 Jan 15th " " Mt. Erica
1995 Jan 15th " on Dargo weekend.
1996 Jan 20th " at Weeping Rock near Paw Paw Plain
" other places on Mt Hotham weekend.
2006 Jan 17 " Mt St. Gwinear. - Ralph

Callistemon rugulosus (macropunctatus) Scarlet

1971 Aug 30th Plant Growing in the Grampians.
Not in bud or flower. leaves about
7cm long, brush of seeds 5cm long.
leaves pointing upwards. lanceolate &
ending in a little pungent point.
leaves about 5mm wide & mid.vein very
prominent.

Callistemon sieberi River Bottlebrush.

2009 Apr 28 This species was originally C. paludosus
Alix Williams brought specimen to meeting. She had collected it at the tunnel on the Thompson River. leaves exactly followed description in Flora of Victoria and it is recorded for that area in CDrom. Flowers are distinctly separated and in bud.

*

Callitriche stagnalis — Common Starwort

1995 Nov 18th Collected specimen from in cattle grid at front entrance to our farm.
Good illustration & description in Helen Aston's book p. 58. Female flowers - very tiny with 4 ovary sections - at base of leaves present in this specimen. Apparently male flower is quite different ~~as~~ with single stamen. Both male & female flowers can occur on the same stem. Very soft flaccid plant.

1995 Apr 12th Growing in Drouin Water Reserve.

1999 Oct 16th " " Bunlac Wetland Darnum.

gracilis

Callitris (preissii) Slender Cypress Pine

1911 Sept 4th Plant growing on Mt Arapiles. Do not remember if any of the plants were in flower. Specimen did not have flowers. Dorsal surface of leaf rounded giving branchlets a terete appearance. Cones on specimen were open and almost black, which I presume means they are old. Cones with no protruberances but with lines longitudinally but smooth to the touch. All scales attached at base almost width of cone. There are a few unopened cones, light grey with tufts irregularly on them but otherwise smooth. Divisions between scales do not continue over base.

Callitris rhomboidea Oyster Bay Pine

1971 Aug 29th Flowering at Lake Bellfield Lookout in the Grampians. Cones with point or protruberance on each cone-scale. Cones app. 15 mm wide. Dorsal surface of leaf keeled giving branchlets an angular appearance. Do not remember seeing open cones on any of the plants. Divisions between scales continue almost to stem at base.

Calocephalus citreus Lemon Beauty-heads

1993 Feb. 12th Flowering on railway reserve at Fulham near aerodrome. Leaves opposite except uppermost ones near flowerheads. Leaves 1-2 cm long, pointed with recurved margins, hairy, inclined to be sheathing at base & pulling down branch when pulled off. Flowers yellow 1-3 in partial head but complete head oblong, ~~general~~ compound head with general involucre absent. Partial head bracts many, ligulate, transparent with yellow apex. Achenes app 5 mm long (hard to measure) with 5 bristles in one I had under the microscope & with fine plumose apex. Whole plant appx. 3ft high, ecthony grey and not branched above 9"-12" from the ground. New record for T by my records, sent specimen to Dr. Parsons.

1994 Nov 1. Beginning to flower in Casuarina Reserve Fulham

Calochilus Campestris

22nd Oct. 1967

Flowering along Whitlaws Rd. Calligree Sth.

Scape 46 cm + still some flowers to come out. Will have 10 flowers. Perianth 14 cm so far with 4 flowers in bloom. Scape 6 mm wide and very strong. Each flower has a bract up to 4.5 cm long, stem clasping.

Dorsal Sepal: 1.5 cm long + 8 mm wide. at base and gradually tapering to a point, slightly curved inwards. Green.

Lateral Petals: 1 cm long + app 8 mm wide. also tapering to point but upper margin curved downwards Green but more transparent + irridescent with red lines horizontal. These petals are quite open so that flower is 1.5 cm across, slightly curved inwards but at base

Lateral Sepals: Same size + shape as dorsal sepal. Green curving in about as much.

Labellum: 1.3 cm wide and almost 2 cm long ending in glabrous strap 5 mm long + 2 mm wide which recurves back so as not to be visible from front of flower. Margin of labellum fringed with fringe 3 mm long near base + still about 2 mm long near strap. Labellum green + irridescent but tips of fringe dark red or maroon. Base of labellum has bluish purple bar 5 mm

long and 3 mm wide but base slightly curved
Bar risen and sides almost white
dark red or maroon
M. Hairs on labellum ~~sparse~~ but long V shaped
covered with hairs denser at wider part. Hairs about
5 mm long & ones on point recurved at tip.
Whole labellum very beautiful. Side shape of
labellum
Whole flower approx 2·5 cm from tip of Dorsal
Sepal to curve of labellum.

Columm: 6 mm high 5 mm wide at base including
wings. ~~Hooded~~ - duck bill hood at least 5 mm
long - Pollinae under duck bill but wide enough
to be visible at each side of it. Duck bill approx
2mm wide. Wide rostellum 3 mm wide almost
circular. Wings almost transparent green with
red markings and gland at out edge of each
wing with red semi-circle on inner side.
(6). Markings on wings vertical but inclined
to curves.

Ovary: 1 cm long deeply grooved and stem
1 cm long stem but extending as flower closes.
Leaf: app 12 cm long in section
dark green. Red at base. Leaf rigid
Stem bracts: three first one 9 cm long +
almost at same level as leaf, other
two 7 mm long, all coming to fine

point and almost cylindrical after leaving stem but all stem clasping. infact completely encircling stem at commencement.

Whole flower open a handsome labellum overlapping both lateral sepals so as to give the effect of almost being part of them.

1969 Nov 2nd. Flowering at Briagalong.
Nov 15th Also flowering at Whitelaws Rd T'gon Sth
1970 Oct 18th Flowering at Briagalong.
Nov 12th " at Whitelaws Track & Reids Corner
1975 Nov 2nd " " Mullungdung Forest on Anzac Rd
1978 Jan Calochilus saprophyticus Synonymous with C. campestris. P.H. Jones Orchadian 5(6): 83 (1976) I.C. Beauglehole & R. Parsons]
1989 Nov 29th What was Calochilus saphrophyticus flowering in Mullungdung on Anzac Rd - .8km past Harrup's H'way. Plant about 2ft high only 3 flowers left not spent so plant has been flowering for a while app 6 flowers spent. Teeth on labellum very conspicuous as "beard" was sparse & short although very colourful. Tip of labellum very short & broad. Several leafy bracts up stem with on bract right at bottom of stem that really just went round stem & no lamina. Beautiful specimen.
2004 July 11th Photographed. 5 sides 0-5-97/5 look like C. campestris in Pictorial Guide to Wild Orchids of Victoria

2001 July 11th But slide 398 which is labelled C. saphrophyticus looks like C. herbaceous in Jeanes Book Pictorial Guide to Wild Orchids of Victoria but is not in Flower of Victoria though is included in Census Jan 2000. However there is no side photo to be sure there is no tail to the labellum though it doesn't look like it from the front. Also lateral ~~sepals~~ petals are curled forward.

Calochilus gracillimus

1991 Jan 27th Flowering in area along Wulgulmerang / Benambra Road before Rocky Plain. Think it was just after Emu Plain. Would have passed it by as a small form of Calochilus robertsonii if I hadn't been told. Still there was no ridge between glands at base of labellum and the tip of the labellum was straight + slightly hairy.

1999 Jan 23rd Recorded for Gelantipy weekend.

Calochilus imberbus (beardless)

1969 ~~Oct 12th~~ Nov. 5th. ~~(Flowering near Beaconsfield Upper and along Tyrong North Road.)~~
Flowering at Cowwarr.

Scape: 1ft with 3 flowers 1 leaf bract and a flower bract for each flower.

Plant very like C. Robertsonii without a beard.

Green with red veins.

Dorsal Sepal: ~~Hooded~~ almost continuing on from ovary. Green with few red veins.

Lateral Petals: About ½ size of dorsal sepal. Curved in well - red veined on both sides almost transparent

" Sepals: About same size as Dorsal sepal - similar very pointed - apex tapering - green outside a few veins inside

Labellum: very wide at base, pointed & curved inwards ½" at base, ½" long. Same description as lateral petals.

Column: Green centre, yellow lobes, red crosses at base.

Leaf: 8" yellowy green, curved upwards obvious ridge on under side.

Nov 15th A very few plants in flower - only the top flowers open.

1971 Nov 13th Flowering at Cowwarr

1975 Nov 2 " on Anzac Rd. Mullungdung Forest
All four species of calochilus flowering in close proximity to each other. Reported to Herbarium.

1976 Nov 10th Recorded with Dr. Parsons. Try no specimen

1987 Oct 31st Flowering at Cowwarr.

Calochilus paludosus.

1975 Nov. 2nd. Flowering on Anzac Rd. in Mullungdung Forest. .8ml. from corner of Anzac Rd ~ Harrup H'way on ~~left~~ right-hand side.
This flower does not have glands at the base of the column but with prominent lobe in front of uniting column wings.
Hairs on labellum not glandular.
Apex straight although perhaps bent back and certainly without hairs. (5-10mm long.)
The four species of calochilus all flowering in close prominity to each other; C. robertsonii, C. imberbus, C. campestris + above species.
Sent specimens to Herbarium to verify identification.

1976 Nov 10th Recorded with Dr. Parsons T27 no specimen

1987 Oct 31st Flowering along Johnson lane from Cowaramup to Seaton. Cowaramup end of lane.

1989 Nov 27th Plants flowering on Anzac Road opp. same place as in 1975 but on other side of road. These plants about 9" high.

2000 Dec 3rd Andrew Coreen reports this plant in Sweetwater Ck. Reserve.

Calochilus Robertsonii (Brown Beard)

1966 Nov 2nd Flowering on Clark's Road.
13th " at Cormandale
27th last flowers open.
1967 Jan 1st Seed pods green.
Scape:- 31 cm
Inflorescence:- 4 flowers each with sheathing bract.
Dorsal Sepal:- 1 cm long, 5 mm wide at widest part, hooded, green with prominent red veins lengthways and branched at margins.
lateral Petals:- length 6 mm, width 4 mm, pointed upwards at apex with many longitudinal veins, almost transparent. At right angles to dorsal sepal.
lateral Sepals:- 1.5 cm long, 5 mm wide, pointed with slightly incurved margins. Green with 2 red veins in upper part. Slightly lower than lateral petals.
labellum :- 20 mm 2 rows dark glands across labellum, rest of labellum covered with reddish or brown hairs. labellum under hairs looks red. labellum tip approx 4 mm glabrous bent sideways }
Column:- As broad as long approx 3 mm. Winged with dark gland at base of each wing: Red line almost joining glands.
Anther green, horizontal as long as Column & shaped like a ducks bill.
Ovary:- 1 cm long with 4 deep grooves.
leaf:- V shaped rigid 20+ cm. I think shorter than scape & stem bract.
Oct 8th Flowering at Chester Park.
Nov 3rd In bud along Seniris Track. presume this orchid.
1969 Nov 2nd Flowering at Cowan.
1970 Oct 11th " " Heyfield

1971 Oct 27th Flowering Reid's Corner.
Nov 13th " at Cowwarr
1975 Nov 2nd " " Mullungdung Forest on Anzac Rd.
2000 Dec 3rd In bud in Sweetwater Ck. Reserve.
2006 Nov 4th Flowering at Springsure area.

Calochlaena dubia.

Culcita dubia — Rainbow Fern

1966	Sept 27th	Darlamurla.
1969	Mch 1st	Behind Shingle Creek.
1966	June	Brothern District - many variation in shape of pinnae.
1966	May	Home Bush
1968	Apr. 29th	" " with sori
1970	Aug 29th	Darlamurla.
	Nov 23rd	Lily Tilly Gully.
1972	July 16th	Fairy Dell.
1993	Jan 31	Errinundra
1995	Apr 12th	Drouin Water Reserve.
1990/1	Oct 12	Mr Heddrick
1995	" 25	" "
1997	Apr 5th	HPM Reserve - Girand Ridge Rd.
2000	Dec 3rd	Sweetwater Ck. Reserve

Calomeria amaranthoides Humea.

1970 Jan 24th Flowering on roadside past Buchan.
Also saw plants at Combienbar.
Nov 25th Plants growing at Briagalong.

next page too

CALOMERIA AMARANTHOIDES

THE INCENSE PLANT

Who would want to try to be a botanist? On the September excursion to the forest to the north of Briagolong there was an aromatic, herbaceous, large-leafed plant that I wasn't sure of the name. It could have been one of two similar plants. To decide on which one was the problem. If they had been in flower there would have been no trouble as the Feather Bush (*Apalochlamys spectabilis* has a plume of bronze yellowish small flowers while the Incense Plant (*Calomeria amaranthoides*) has a large delightful plume of small reddish flowers. But we would have to wait about 18 months for them to flower.

Both plants have several features in common. They are both biennial, large herbaceous plants, aromatic with alternate, stem-clasping leaves with crenate margins and some glandular hairs. They both have white stems caused by long dense hairs. They are each a single species genus and are endemic to Australia. They apparently both grow in profusion after land has been cleared

The differences are that the Feather plant is whitish underneath the leaves which are lanceolate and 6-10cm long by 15 to 25mm wide. The plant grows to 2m high. While the Incense Plant has leaves woolly beneath but retaining their green appearance, ovate to obovate and growing to 12-25cm long by 8-10cm wide. The leaves are said to be pandurate, which is violin shaped, but the inward curve in the lower section is not very pronounced. One book says it grows to 2m while another says 10ft. This difference may be due to one book just measured the plant without flowers and the other measured in flower. The leaves also have little 'ears' where they are clasping the stem. Miss Galbraith mentions that the veins of the leaves of the Incense Plant are impressed into the leaf but does not mention the veins of the other plant.

After deciding that our plant was the Incense Plant I then went to Cliff Beauglehole's book on the Hinterland region, which extends from Walhalla to Nowa Nowa and up to the border of the alpine area, and found Cliff had recorded the Feather Bush only in 2 areas from Fernbank to the east and the Incense Plant in seven of the nine areas he divided the region into.

The Incense Plant was known as *Humea elegans* and changed its name sometime between 1962 and 1972.

All this information was not recorded in one book and I had to consult five books to collect it. The books I used are Handbook to Plants in Victoria by J.H.Willis; Collins Field Guide to the Wildflowers of South-East Australia by Jean Galbraith, Flora of N.S.W., Flowers & Plants of Victoria by Cochrane, et al and The Distribution and Conservation of Vascular Plants in the Gippsland Lakes Hinterland area, Victoria by Cliff Beauglehole.

Don Thompson

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Bon Thompson

Calomeria amaranthoides Plume Humea.

Plants in flower near Buchan on way to Native Dog Camp out.
Also plants near Club Terrace,
1973 ~~Sept~~ Oct 28th Plants growing in Avon Country

Calotis cuneifolia Blue Burr-daisy

1973 Sept 4. Flowering in the Whipstick. Flower mauve with appx. 45 ray florets. Back of flower has burr-like appearance & should think when florets have disappeared flower-head would look burr. Several rows of bracts each ending with dark point. Bracts & stem very finely hairy. More than one flower to main stem. Leaves ½" long. spoon shaped or toothed at apex. Some had 5 teeth. Plant about 1ft high.

Calotis erinacea Tangled Burr Daisy

1973 Sept 6th Flowering in Whipstick.

Calotis lappacea. Yellow Burr-daisy

1996 Jan 20 Flowering on track to Mt Loch Mt Hotham weekend. Flower yellow, petals narrow & I think spoon-shaped.

Calotis scabiosifolia Rough Burr-daisy

1992 Jan 25 Flowering up near Buckely Plains on side of road. Tall daisy with alternate small entire stem leaves. Basal leaves with stem, entire, blunt ish, lanceolate. Flower bluish, achene hairy awns very unequal.

1999 Jan 23rd Recorded on Cielanthpy weekend.

~~kirtum~~ ~~marginal~~. Caltha introloba.

Alpine Marsh-marigold

1969 ~~Jan~~ Nov 23rd Found plants on Mt Baw Baw. They were dwarf almost prostrate plants with leaves with two erect basal lobes crossing over the stalk.

1971 Jan 30 Found Caltha plants but no flowers. Seed stalk is yellow, fleshy, ribbed and flattened up to 6" high the highest we saw. Head of seed stalk is 8 pointed star.

Each segment is deep furrowed and little tan seed slides down to point and disperses. Each segment appr. ¼" deep.

1972 Feb Plants growing at Mt St. Gwinear.

1994 Jan 16th " " " " "

1995 Jan 15th " " on Targo weekend.

1996 Jan 19th " " Snow plains on Mt Hotham weekend.

Calystegia marginata Forest Bindweed

1993 Feb. 26" Plant growing along track to Shallow Inlet.

1994 Jan 16. Flowering along Thomson River above the Walhalla Rd. bridge.

1999 March 11" Almost finished flowering, plant with many seeds. Plant that twines even around grass stalks. Flower in bud 1.5 cm long. Bracteoles 2, bigger than calyx and almost round in shape. Bracteoles 8 mm long & measure 1 cm wide not allowing for raised shape. Fruit about 7mm diameter. Leaves 6 cm from tip of lobe to point of leave. Shape narrow, lobes diverging and two lobes not equal in length; often bigger lobe with tooth on inside & sometimes both lobes with tooth. Flower stalk 2cm, leaf stalk 2.5 — 4 cm long. Stems ridged and flower stalks flattened often with tubercules on them. Plant glabrous Flowers from base of leaf stalk.

Growing along the creek on our property.

*Calystegia silvatica. Circaler Birdweed

1996 Feb 3rd Flowering along Downies lane after floods. large white flowers with blunt bracts, bracts overlapping for most part & base much inflated & keeled. Robust creeper that grows up adjacent trees.
Also seen at Sale Common near junction of tracks to both boardwalks but nearer long boardwalk.

Mch 23rd Flowering still at common at Sale at west end of boardwalk. These flowers were pink & not as large as the ones on Downies lane. Sent Specimens to Dr. Parsons & they verified identification.

May 5th Plants still flowering along Downies lane.

May 19th Plants have finished flowering. This is 4½ months. No wonder the species spreads.

July 12th Received letter from Dr Parsons that Jeff Jeans has identified the ~~Downies lane~~ Sale Common specimen as C. sepium. Jeff is doing up Convolulaceae for Flora of Victoria.

1998 Dec 4th Flowering along Downies lane. Plants have spread quite a distance along the creek frontage from previous year.

Calytrix alpestris Snow Myrtle.

1971 Aug 30th Flowering or at least commencing to flower, just odd flowers out, in the Grampians. Buds very red but flower white & pink. Flowers terminal in bunches. Leaves about 7mm long, more spreading than retrogyna and darker. Calyx without hairs on calyx.

1972 Aug 30th Flowering at Flat Rock area. Leaves spreading at right angles to stem, no hairs. Thread-like hairs on calyx not very long. Not sure of this identification.

Aug 31st Flowering in Grampians. Hairy stems & leaves, leaves very small about 3-4 mm long & hairy. No thread-like hairs.

Aug 27th Flowering in Little Desert.

Calytrix tetragona.

1967, 4th Sept Plants along Lime Pit Rd. Rosedale. Calyx with long points make plant easy to identify.

1968 Sept 28th Flowering at Golden Beach turn-off + at Dutson Downs. Glorious darke pink petals + long white stamens give plant very feathery appearance— leaves nearly cylindrical and close together. Plants just commencing to flower. Would be lovely sight if whole plant in flower.

1969 Oct 4th Flowering at Burgoin's Cap. in full glory. Very pink variety.

1970 Jan 2nd Just a few flowers still in bloom at Burgoin's Cap. But seeds were lovely deep red color and gave plants a very pleasing appearance.

Mch 28th Flowering along Lime Pit Road. Calyxs lovely deep red color.

May 25th Plants at Little Tower, Willung but no flowers.

Oct 19th Flowering at Briagalong.

1971 Sept 1 Not Flowering at the Grampians but identified by hairs on the calyx. Very healthy plant with leaves 1 cm long + revolute.

Oct 3rd Flowering at Dutson Downs.

1992 Aug 25th Plants growing in Little Desert. This form has very dense hairy leaves about 1/4 long. Hairs give it a very light green appearance. Flowers pink hairlike tips to calyx in usual proportion but flowers are small.

1993 March 17 Plants growing at Lake Tali Khan.
1992 Aug 29th Flowering in the Cirampians.
1991 Oct 12th " on Mt. Hedrick.
1994 Nov 9th " on Licola weekend
1995 Oct 25th " " Mt Heddrick

tetragonia. P3.

Calytrix (sullivanii) Grampians Fringe-myrtle.

1972 Aug 29th Plant growing in Giolton Gorge - Flat Rock area. Leaves ~~very small and very dense and hairy~~ about ½" long, thin, grooved about. Thread-like tips not as long as tetragona but much longer than alpestra. (~~Greyish tint to leaves probably because of hairs~~). Identified by Miss Galbraith

2006 Nov 11th Flowering at Lake Fyans - Ralph Laby previous ~~next~~ page too.

Cardamine (debilis). gunnii Common Bitter-cress

1984 Nov. Flowering in High Country near road turnoff to Carey's lookout into Bryce's Gorge. Delicate little plant with flowers more or less singly. Photographed.

Nov 2nd Flowering down road to right - not Hewitt's Plain Road.

1998 Muelleria 9 1996. revision of Cardamine gunnii - lilacina complex. There is a key to this complex in the publication.

2004 Feb. Article in Mulleria Vol. 18 2003 gives key to Cardamine species in Australia. (17 species)
Census 1st ed. 2003 records 15 species for Victoria.

1996 In Muelleria Vol 9 1996 key to C. paucijuga + allies.

*

Cardamine hirsuta Common Bitter-cress

1968 Aug 25th Flowering in A.P.M. behind our place. Has pinnate leaves. Leaflets almost circular with a point, final leaflet bigger but same shape. Flower ring - 4 petals 4 stamens. Many flowers on one stalk each group flowering at different times. Seed pods grow from centre of flower to about 1" long & you can see the indivual seed shapes in the immature pod. Pods very narrow, and protrude past the later flowers. Calyx shorter than petals. Leaves bitter to taste.

Sept 13th Flowering at Stoney Creek.

1990 Nov 14th Flowering in home lawn.

2002 Oct 5th " " Corrigan Road Reserve.

Carduus tenuiflorus Shore Thistle

1994 Oct 30 Growing in Dawson Water Reserve

Carex appressa. Tall Sedge.

1989 Nov 4th Flowering in West Cully - Yallourn North.
Not sure if this identification is correct.
Plant with many leaves making a densely tufted perennial. leaves grasslike 5mm wide with rasplike margins I think caused by stiff sharp teeth. leaf lax + tapering to a dried tip. Flower stalk triangular rasplike when moving down the stem but smooth feeling going up. Leaf many veined with prominent vein on back v-shaped (slightly) on top.
Flower stalk with many fine ridges but triangular edges sharp + well defined - not rounded.
Spikelets coming off stalk all around it. Spikelets erect so as to be almost parallel to stalk
Flowered part of stalk almost 300 cm.
Flowers on spikelets all around the stem but under the microscope the nuts have all fallen so we are only left with bracts which are deeply concave.
Think this is plant Dad calls Bayonet Grass

1994 Nov 1. Growing + flowering in Casuarina Reserve Fulham
Oct 30 " " " Dawson Water Reserve
1995 Apr " Drouin Water Reserve
Dec 19 " Railway line Reserve Tigon
1996 Dec 7th " " Reservoir Conservation Reserve, Tigon.
2002 Apr 27th " " Heyfield Wetland.
Nov 30th " Toongabbie Wetlands

Carex brevicalmis Stream Sedge

2002 Sept 5 + Oct 12 Growing in Railway Reservoir Reserve, Tigard

Carex brownii Sedge

1996 Dec 7th Crossing Railway Reservoir Conservation Reserve, T'gon.

Carex fascicularis Tassel Rush.

1993 Mch 27 Specimen collected on Club excursion by Ellen Lyndon & identified by Ellen.
Fruiting head very distinctive with long thin peduncles that cause heads to droop.
Good illustration & description in Black.

1996 Dec 7th Growing Railway Reservoir Conservation Reserve, Traralgon.

1999 Oct 16th " Banlac Wetland Darnum

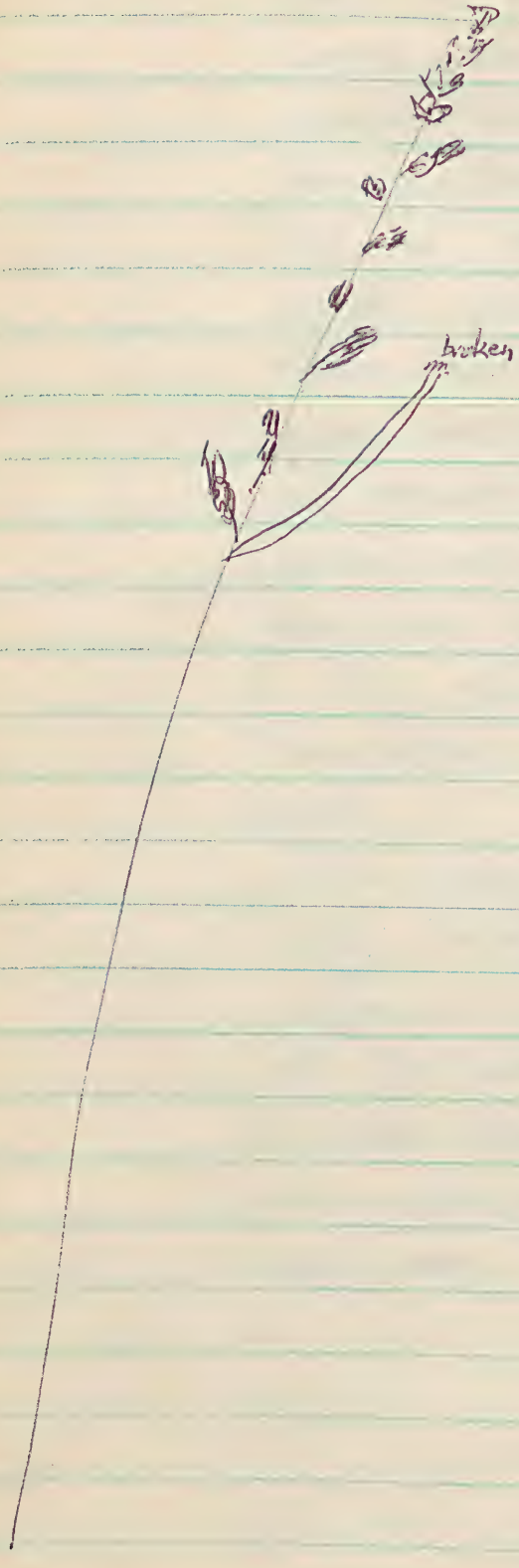
Carex gaudichaudiana Fen Sedge

2002 Nov 30th Identified by lead lady at Toongabbie Wetlands near the bridge on ~~creek~~ east side of waterway. I have it recorded for along creek on Norm's farm below house on 10/3/93.

TLR/118/6mm.

Carex gunniana Seedge.

1993 Mch 20 Plant in seed along Tanjil River in damp places.
Culm scabrous, triangular at top but very smooth towards bottom. Glumes ovate pale. utricles longer than glumes & ending in a reverte beak. quite acute & could be two points separating.

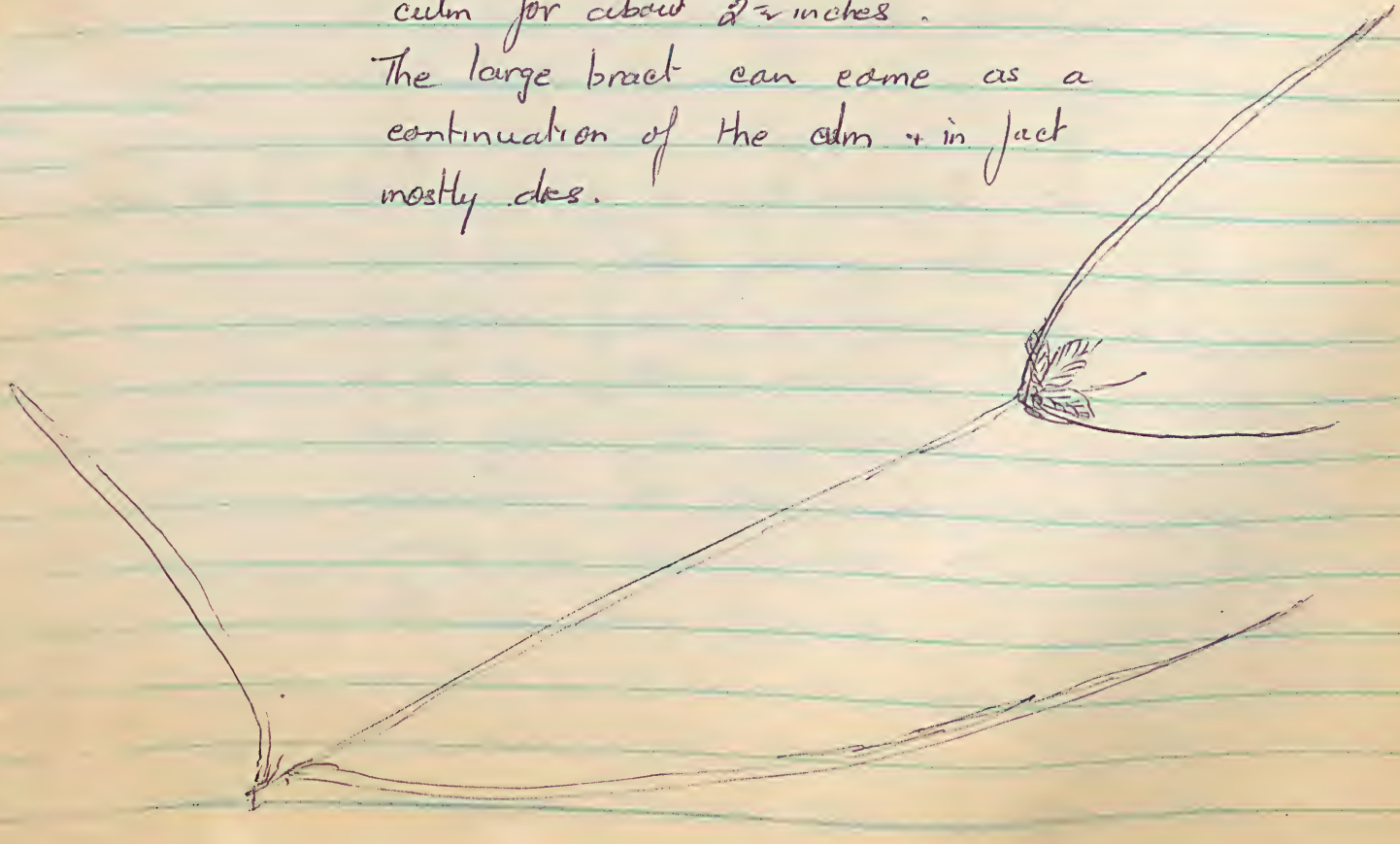


Carex inversa. Knob Sedge.

1993 Mch. 13th Plant growing in drain along Hendersons Rd. Toongabbie. Not a tall sedge – our specimens were about 18" high though apparently plants can be much smaller according to the books. Leaves are grasslike, flat, with many fine parallel fine veins. Leaves appear to grow from a three cornered stem that continues & has the flower-heads on it. Leaves vary in length up to app 1ft. and ± 3mm wide. Flower heads consisted of 3 spikes in our specimens. Spikes sessile, terminal on culm almost as long as leaf though books say more than ½ length of leaf. Spikes arranged ↓ with two or three leaf-like bracts from base of flowerhead. One bract about 3 times as long as the other. Glumes greenish with almost transparent margins although margins not visible when dried.

Culm triangular with each face indented, hollow, stiff, smooth. There does not appear to be any roughness on these plants. Leaf curls around the culm for about 2½ inches.

The large bract can come as a continuation of the culm & in fact mostly does.



1995 Dec 19th Crowning along Railway line Reserve Tigon
2002 Nov 14th " in " Reservoir " "

Carex. (gaudichaudiana) polyantha

1993 Mch 10 Plant growing along Stoney Creek just below Norm Thompson's house at Traralgon Sth. Also found growing along Tanjil River last month. Apparently a plant that does not flower abundantly as we didn't find any flower heads on the Tanjil River. On the plants in Traralgon Sth had only 4 heads even though it was a large clump growing in stoney area of the creek. The leaves are grass-like flat with many veins and app 5mm wide, dark green and up to app 4ft long. The inflorescence stem was over 4ft. It is 3-sided. When cut it is Y indented on all sides.
Inflorescence was very dry but looked as if it may have bent over. Spikes are singly from bracts for 5 bracts + 2 from terminal bract. It appears as if some of the spikelets or fruits have fallen off ∴ we assumed they were female spikelets + the one's still persisting are the male flowers. The top 3 were apparently all male with very short stems. Next 2 may have had a few female flowers at base, next was more than half female while the last two were almost all female. Glumes of male flowers are ovate + acute but without any awn. Bracts appear to be leaf-like though all have been broken off.

1995 Nov 7 Plant flowering in bull paddock. This is first time we have found fresh flowering material. I think the identification from C. gaudichaudiana to C polyantha is for the following reasons. The bract of the lowest spike of the inflorescence is longer than the inflorescence. All other involucral bracts were also long. Leaves are wider < 4 mm. Glumes are dark narrow with paler midrib. Utricles were faintly nerved + apex not bifid but flat + could easily have minute papillose. Style where I could find them were bifid.

Dec 19 Growing on Railway line Reserve T'gon

1996 Dec 9th Growing Railway Reservoir Conservation Reserve, Traralgon.

Carpobrotus · aequilaterus Angled Noon-flower

1992 Apr. 25th Think this is right identification but without flower can't be quite sure. leaf with continuous sharp edge for full length; 3 angled.
Plants growing on Nooramunga Coastal Reserve at Port Albert.

1993 Feb 28th a few flowers on plants but only a few in marshy area on Red Bluff beach near Wilson's Prom.

*. Carpobrotus aequilaterus Angled Pigface

1996 Oct 15th Growing at Paradise Beach at 2nd pipeline.
Nov 23rd " " Old Port Trail, Nooramunga Coastal Reserve.

Karkalla

Carpobrotus rossii (Angular Noonflower)

1972 Aug 27th Plant growing in Mt Arapiles area & also think it grew near Salt Marshes at Salt Lakes near Natimuk.
leaves opposite & 3-sided.

1973 Sept 6th Plant growing in Whipstick.

Cassinia Aculeata Common (Dogwood)

1966 Dec 17th Flowering T'gon Sth Reserve.
1967 Dec 29th " Erica Rd. Has been flowering round home for about month. Erica variety red pink buds.
1968 Jan 28th Flowering Wolfe's Swamp.
1972 Jan 30th " at Mt Hewitt.
1993 Jan 30 " in Errinundra N.P.
1994 Oct 28th " in T'gon Sth Reserve
" " " " Dawson R'wey Reserve.
1995 Apr 12th Growing Drouin Water Reserve.
1994 Nov 9th Flowering Nicola weekend
1995 Jan 15th " Dargo "
1996 Oct 12 " Mt Hedderick
1995 Oct 25 " " "
1996 Jan 20th " Mt Hotham weekend.
1997 Apr 5th Growing in APM Reserve - Grand Ridge Rd.
2001 Aug 27th " " Newborough Bush
Dec 1. " " " " Sandy Ck.
2004 Apr 3 " " Colley's Rd. Block
2006 Nov 4 " " Springsure area.

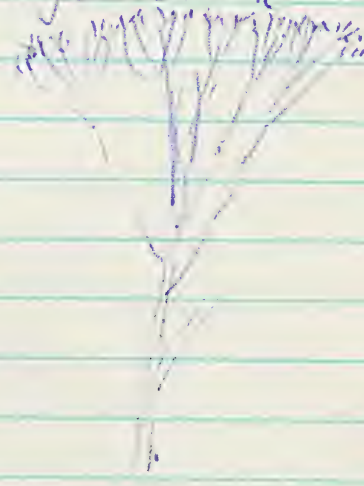
Cassinea arcuata Drooping

1973 Sept 3rd Plant flowering in Whipstick.
Very tiny leaves + fine drooping
flowers a little like tiny humea but
biscuit coloured.
Grows over near Leongatha.
Also grows in Mullungdung near pine
plantations.

2000 Dec 3rd Flowering in Sweetwater Ck. Reserve.

Cassinia longifolia (shiny)

1967 Jan 1st Flowering in Tigon Sth Reserve.
1968 Jan. 4th " in APM Bush
Jan 28th " " Wolfe's property.
1977 Dec 20th Flowering in bush behind our front gate. Can be distinguished from Helichrysum stendrabium by the arrangement of the flowers and the sticky leaves + stems. Flowers of Cassinea are flat on top + the stems of the flowers are at an acute angle to the main stalk. Flower clusters have long stalks.



1993 Jan 30 Flowering in Errinundra N.P.
1994 Nov 26 Flowering on ~~APM~~ Block Stradbroke ~~Sth~~. Gipp. Hway.
~~Oct 28~~ " in ~~Casuarina Reserve~~ ~~Futhum~~ Tigon Sth. Reserve.
Oct 30 " " Dawson Water Reserve.
" " " " Rwey "
1995 Apr 12th Cirawing Drouin Water "
1994 Nov 9th Flowering Licola weekend.
1995 Jan 15th " Dargo "
1990/1 Oct 12 " Mt Heddriek
1995 Oct 25 " " "
1996 Jan 20th " Mt Hotham weekend.
1997 Apr 5th Cirawing in APM Reserve - Grand Ridge Rd.
2000 Dec 3rd " " Sweetwater Ck. Reserve.
Dec 1 " " Sandy Ck. Bush Newborough.
2004 Apr 3 " " Colley's Rd. Block.

2006 Nov 4" Growing at Springsure area.

Cassinia trinervia.

1992 Dec 23rd Plants in bud in Wirilda at top of hill on walking track. Leaves very thin, dark green above, lighter beneath, 6·5 cm long + stem very short only about 4mm. Width of leaf is ± 5mm with main midrib very pronounced on underside + the other veins are on the margins. Flowers are not as dense as the other Cassineas round here and the buds appear whitish at present. Flowers are along the branch rather than just at the end. Leaves are opposite. If flowers are close enough to make a cluster it will be elongated. In specimen flowers appear to hang down.

1993 Jan 30 Growing in area near Combienbar camp.

1996 Dec 7th " in Traralgon Sth Road from Calligree Sth Rd turnoff to Downies Lane.

Cassinia uncata — Yellow Cassinea

1971 Jan. 30 Growing on way up to Mt Howitt about Tamboritha and at Howitt Springs. Here plant about 2½ ft. leaves very narrow light greyish green, growing in clumps up the stem with one long leaf about 1" to 1½" long and rest of clump much smaller. Flowers terminal in branched head but not raceme. Main stem reddish when dried.

'92 Sept 1. Plant growing in flat Rock area. leaves about 1 cm long with recurved edges so that underside of leaf is not visible. Leaves glabrous above. Branches brown with very tiny hairs. Flowers in flat head. Achenes whitish, ribbed but glabrous with about 12 bristles. Don't know colour of flowers as only dried heads on plant.

1993 Mch 17 Flowering at Lake Tali Khan excursion with Cliff Beruglehole, Evan Chesterfield, Dad & Max.

Sept 3 Plant growing in Whipstick. Tiny leaves, flat flower heads. Dark green.

1992 Jan 24th Flowering along road between Omeo and Angler's Rest.

2008 Mch 15th Em Perkins in "Growing Australia" Sept 2007 states. C. uncata is now considered to be confined to NSW. & N.E. South Aust. Instead C. uncata in Victoria include C. longifolia (Gipps Valleys) C. scabrida. (Warby Ranges) C. diminalia (Bendigo area & Kerang) & C. complanata, (Big & little Desert).

Cassytha. Glabella. (Tangled Dodder-laurel)

1966 Sept 17th Seed pod of this plant found along the Racecourse Rd. Rosedale. Fruit oval, orange small - shining.

1967 Sept 16 Ditto

1969 Feb 23rd Flowering own bush.

July 26th Found plant growing on a matrush plant - probably the long matrush but too early in season to be sure.

1970 Jan 17th Flowering along Jeninis Track. Calyx of flower white.

'69 Oct 18th Flowering at Rosedale

1970 May 25th Seeds on low plants - seed elongated small, orange red but pretty.

Sept 15th Plants growing in RPM reserve with seed pods.

1993 Aug 25th Seeds on plants in Boola Boola

1995 Feb 7th Flowering along Anderson's Track.

Apr 12th Growing Drouin Water Reserve.

1994 Nov 9th Flowering fruit Nicola weekend.

1995 Oct 28th " " in Wonthaggi Heathlands

1997 Sept 30 ~~In fruit~~ Growing along Moe. Rail Trail. This plant had ~~Lots~~ of orange globular growths that looked like fruit but when we cut them open they each contained a little caterpillar. Cis the growths had no sepals or calyx we assumed they were galls. They grew in a line along the stems. Neville Scarlett said yes they were galls.

1997 Oct 25th Plant growing at Labertouche. Fruit on this plant was oval shape longer than wide 5 x 4mm. Remnant of style still on fruit. Flora of Victoria Vol 3 p. 28 gives this fruit as C. glabella f glabella

and fruit that tapers at each end as C. glabella f. dispar.

2001 Aug 27" Crossing in Newborough bush

No 13 " " " in seed.

Cassytha melantha (Large Dodder laurel.

1909 July 20th With a very few flowers but many buds at Glengarry Nth.

1990 Sept 18 Think this plant grows near Dianella ~~tae~~ tasmanica in Shingle Creek Reserve.

Nov 25 Plants growing at Briagalong.

1994 Nov 26 In fruit on ~~opp~~ block Stradbroke Sth. C.pp. Hway

Oct 28 " " " Casuarina Reserve Fulham

1996 Aug 31 Growing in Jindivick hand-care area.

2001 " 27 " " Newborough bush.

2006 Nov 14th In fruit but not mature in Springsure area.

Cassytha pubescens (Downy)

1968 Jan 28th Plants in Wolfe's property with both flowers + fruit. Fruit like gravenstein apples only very small.
1970 Jan 17th Flowering along Seninis Track with fruit also on plants.
1969 Oct 18th Flowering at Rosedale.
1970 Sept 13th Plant flowering in DPM. reserve.
1979 " 10th Recorded with Dr. Parsons with fruit for X.
1993 Jan 30 Plants growing near Combienbar.
1994 Nov 26 In fruit on APM Block Stradbroke 5th. Gipp. Hiway.
1995 Apr 12th Growing in Drouin Water Reserve
Oct 28th In fruit in Wanthaggi Heathlands
2004 Aug 23rd Growing in Newborough bush
Dec 1 " " " Sandy Ck.

Casuarina. (Cristata) pauper (Belar)

1970 Mch 7th Plant growing at Cape Hiptrap lighthouse area. Cones about ¾" long. Mrs Lyndon gave this identification as C. Glauca, Blake says C. Glauca is now C. Cristata and Miss Galbraith's book says it only grows in the N.W.

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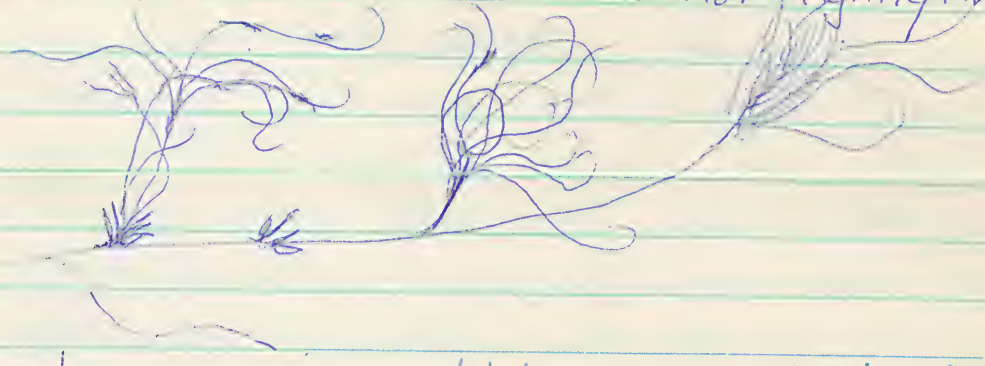
Catapodium rigidum — Rigid Fescue.

1994 Nov 26. In seed on APM block Stradbroke Sth Cipp. H'way

Nov 1. " " in Casuarina Reserve Fulham

Caustis (restiacea) flexuosa. Slender Twist-rush.

1984 - Jan 1st Plant flowering along Boodyarn Road.
Identified by Cliff Beauglehole.
Plant about 5" high growing in groups of branches not evenly spaced along stem.
Ultimate branchlets curved but not lightly ringed.



Although some branchlets are only 2-3" long some were about 4-5" long with 5 sets of bracts along them. Flowers appeared to be at the bracts.

Caustis pentandra Thick Twist-rope

1970 Mch 24th Small greyish plant growing both along the roadside & in the proposed reserve area at Rosedale.
Plants vary from much branched bushy plants about 5" high to taller less branched plants about 1ft high.
The flowers were hanging in pedulous spikelets - tannish brown in color.
Plants very grey with dark brown bracts along stiffish branches. Branches flat on one side & convex on other.
Branches branch at bracts but many bracts where there are no branching
Sept 5th Brown pendulus flowers in new area at Rosedale.
Oct 1. Brown pendulus head as ditto.
1971 Oct 10th " " " at Rosedale

Celmisia Longifolia (Silver Daisy)

1967 Feb 6th Flowering at Erica.

1968 Jan 18th " " Baw Baw. lovely blooms standing well over a foot high and daisies 2" across. Some plants completely covered with black ants, up stems, leaves & all over flower really hiding plants. Two or three together like this + then lots without any ants.

1970 Jan 1st Flowering at Tambaritha Saddle.

24th " " ~~Wild~~ Rocky Plains, (Wulgulmerang

25th " " the Cobberas

1971 Jan 17th Flowering at Mt Useful. Could be both varities growing here. Most of plants have very narrow leaves. There were a few with wide leaves. Saw only two buds with red at back of petals but did not check leaves.

1971 Jan 30 Flowering at Howitt Plains - narrow leaves and on Mt Howitt Hike.

Also on Mt Howitt Hike was broad leaf variety VAR LATERFOLIA which has leaves about 6" long and 1" wide tapering at both ends, green above but very silvery beneath.

1972 Feb Flowering at Mt. St. Gwinear.

1973 Jan 26th " " Mt Baw Baw

1978 Jan. Celmisia longifolia synonymous C. asteliifolia. Willis 2 :684 (1972) [C. Beauglehole & R. Parsons]

C. asteliifolia is [illegible] Celmesia ssp [illegible] ed. 1 Census [illegible]

1995 Jan 15th Flowering on Dargo weekend (only called Celmesia sp. now)

1996 Jan 20th Flowering on snow plains, etc during Mt Hotham weekend.

1997 Jan 18th " " Mt. Baldhead near Omeo.

Celmesia sericophylla Silky Daisy.

1974 Jan 29th Plants growing on Bogong High Plains but only 1 flower was found. leaves drooping + both surfaces covered with appressed silky hairs + having a very velvety feel. Growing along stream bank along road after leaving dam wall.

1982 Jan 31st Plants growing on way to Mr. Howitt at waterfall, 10 km past fork of Moroka and Howitt Roads on right-hand side of road. Evan Chesterfield checked up and down creek and even at another waterfall and could not find any other plants.

1990 Jan 28th Flowering at waterfall as above. There were 3 flowers this year even though it was so dry there was no water going over waterfall. Jean Galbraith says this plant dies completely down to only leave the root system for winter.

Centaurium erythraea Common Centuary

1994 Nov 26th Flowering on RPM Block Stradbroke 5th Gipp. Hway.

1996 Oct 12 " at Paradise Beach at 2nd pipeline.

Nov 23rd " - Old Port Trail, Nooramunga Coastal Reserve.

2001 Dec 1 In bud in Sandy Ck, Bush, Newborough.

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Centaurium spicatum Spike Centuary.

1991 Jan 28 Recorded for Cielantipy weekend. Although this plant is only recorded as far east as Grid N (Melbourne) in Wells Cliff Beauglehole has it recorded for Grea F on his alpine map which is Grid V. Cielantipy weekend was in grids V & W.

Flowers pink in long loose leafy racemes, calyx divided about halfway to base, style bearing a short- ± 2-lobed or only slightly notched stigma.

Ellen described it as much branched, flowers with entire or slightly bilobed stigma as opposed to C. tenuiflorum, which as 2 stigmata. Probably growing at Inverloch.

*Centaurium (Pulchellum) tenuiflorum — Branched Centaury. (Austral Centaury)

1966. Nov 6th Has been flowering for months. Very good specimens on Clark's Rd.

1967 Feb 19th Flowers very colorful where ground disturbed at Wolfe's.

Sept 23 Flowering along Blackwarry Scenic Rd.

Dec 23rd " Morwell National Park very deep color.

1968 Jan 28th " Wolfe's Swamp.

Apr 15th " Anderson's Track not many.

June 16th " Tigon 5th Reserve. not many.

Aug 24th " among pines (young) at Cormandale.

Sept 28th " Dutson Downs.

Oct 27th " at Call 5th Rd.

Nov 10th " Clarke's Rd

1969 Jan 1st " Andersons Track

16th " Rosedale

May 10th " "

1970 Jan 18th " along Seinis Track. Some plants very tall and all with many flowers, bright pink about 1ft to 15 inches high. Found one plant with white flowers.

Jan 2nd Flowering at Tamberitha Saddle in profusion

Jan 24-26th Flowering everywhere in profusion in the Wulgulmerang area.

Mch 28th Flowering along Lime Pit Road + Chessum Road

Apr 26th Flowering well at Screw Creek near Heongatha.

May 25th In bud along Lime Pit Road.

Sept 15th Flowering in Tigon 5th Reserve.

1971 Nov 12th " at Flynn.

1975 Jan. Name change Centaurium tenuiflorum [E. Beauglehole + R. Parsons]

I suspect many of these plants are what was C. minus which is now C. erythraea. Will

have to check them all out.

1985 Dec 28th C. erythraea flowering in Mullungdung and in Boodyarra Forest with plenty of flowers. Most plants had basal leaves and flowers in cluster with all flowers on one level. Anthers on filaments that hardly exceed the stigmas. Stigmas round & hairy with two on ~~the~~ style. Flower tubes not exceeding ~~sepals~~ calyx by very much. Flower quite pink. Plants tall. Leaves opp. with flowers coming from each pair on long stalks (flower stalks) Anthers beautifully twisted

1993 Jan 30 Plants flowering near Combienbar but not sure which species - think it may have been C. erythraea but will have to look more carefully next time.

1994 Oct 28 Flowering in T'gon Sth Reserve

Oct 30 " " Dawson R'vwy Reserve.

1995 Jan 15th " on Dargo weekend

1991 Oct 12 " " Mt Heddrick

1995 " 25 " " " "

Dec 19 " " Railway line Reserve T'gon

1996 Jan 20th " " Mt Hotham weekend.

Oct 12 " " Paradise Beach at 2nd pipeline

1997 Jan 18th " " Livingstone Ck near Omeo.

1999 Jan 23rd Recorded on Gelantipy weekend

Ellen states this plant has 2 stigmata.

2004 Apr 3 Growing on Colley's Rd. Block

Centella cordifolia

(Hydrocotyle asiatica) (Centella.)

1970 Mch 7th Growing along coast at Waratah Bay. Glabrous plant, leaves heartshaped and crenulate. (Some doubt as to whether this plant is introduced.)

This plant is now Centella cordifolia According to Willis this plant is not introduced.

1973 Aug 25th Growing in Boola Boola forest near W17.

~~1978 Oct 28th Growing Broomfield's Road off Gormandale Road.~~

1981. Dec 29th Growing around pond on Stocks Road near Yinnar

1994 Nov 26th Growing on APM block Stradbroke Sth Gipp. Hway.

1995 Dec 19th " " Railway Line Reserve T'gon

2000 Dec 3rd " " Sweetwater Ck. Reserve.

2001 Aug 27th " " Newborough bush

Dec 1 " " " " Sandy Ck.

2005 Mch 3 " " Railway Reservoir Conservation Res. T'gon

Centipeda cunninghamii Common Sneezewood.

1987 Sept 24th Plant growing at Creek on 4 mile Road. Plant rather like robust Ciratiola at first look. Leaves alternate stem-clasping and toothed. Whole plant rather lax. Leaves covered with oil glands. Plant with distinct smell which irritates the nose. Plant over 1ft long. No flowers at this time.

1996 Dec 9th Growing Railway Reservoir Conservation Reserve, Traralgon.

2003 Apr 4th Flowering " " " " "

2001 In Muelleria Vol 15 2001 Key to Centipeda including Victorian species. Also good description + other notes on each subsp. Actually it is a revision of the taxa.

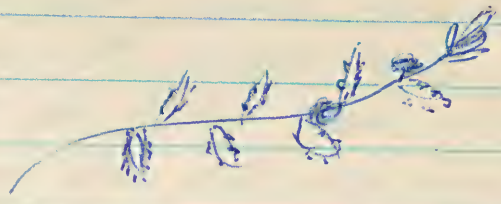
Wrong name ~~of~~ not Cotula coronopifolia was instead Centipeda cunninghamii Common Sneezeweed. Not cotula because of almost sessile heads as opposed to distinctly ~~pedicelate~~ pendunculate heads in Cotula. Cotula yellow annuals + Centipeda yellow green to look at. ~~but~~ Leaves of Centipeda peppery aromatic.

(sp. 1) elatinoides

Centipeda (minima) Spreading Sneezeweed.

1994 May 1. Plant growing in Austen's property near Darlamurla. Identified by Andrew Pagent.

2003 Apr 4 Flowering in Traralgon Railway Reservoir Reserve on the mud where water had receded.



Plants looks a bit like an opercularia or a cotula. heave ±1cm long, toothed. Flowers appear green but when looked at under microscope it consist of elongated ovary with a 4 petalled sessile reddish flower on top. Head of flowers has very short peduncle. Plant with branches prostrate but erect towards end.

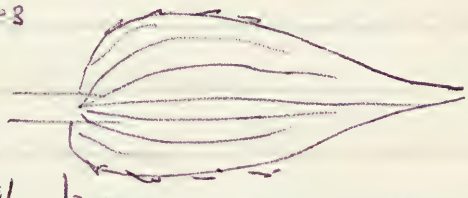
Head

2003 June Name change in 2nd ed. Pansus.

2001 Muelleria - See notes under C. cunninghamii

* Centranthus ruber Red Valerian or Kiss-Me-Quick

1959 Oct. 21st In bud at time Tip area on W3 Tyers.
Plant with opposite leaves almost meeting around stem with smaller leaves coming from leaf bases. Next pair of opp. leaves at right angles to previous pair. Flower bud red with signs of branching flower head. As well as main thick stalk to main flower head there is also smaller flower heads from bases of top pair of leaves.

Leaves  glabrous, blue-green. Central stalk or branch Hollow.

Small brown ring around stalk of secondary leaves. Although main leaves are stem clasping a stem comes from base of leaves & then the secondary leaves are stem clasping to that smaller stem.
English wildflower book says the plants grow in quarries as well as other places. Illustrated in weed book too.
The flower is said to have a spur but our specimen is not far enough advanced.
The plant comes from Europe & the Mediterraneum but is recognized as naturalised in Australia by the Herbarium.

Centrolepis aristata

1970 Oct. Growing at Clifford on land cleared for pines.

Centrolepis Drosera

1967 Jan 14th Growing opp. Waterlily pond Yallarn Nth. in cushions of loose hairlike leaves. Miss Galbraith identified plant.

1971

Centrolepis fascicularis Tufted Centrolepis.

1994 Nov 26" In seed on APM block Stradbroke 5th. Cipp. Hway.

Centrolepis Strigosa. (Hairy)

1970 Sept 14th Flowering in paddock at Datsun Down Road area. Little thick tufts of small stiff leaves app. 1" long and spreading. Sometimes the leaves are red instead of green. Flower stalks longer than leaves. ~~+~~ covered with hairy bracts. Watched carefully but although the bracts loosened up we did not see the flowers. Identified by Miss Galbraith.

Oct 11th Flowering at Heyfield.

1911 Oct 10th Flowering at Rosedale

1995 Oct 28th " " Wanthaggi Heathlands

1996 Sept 5th Growing on Roadside reserve on Tramway Rd Churchill.

Dec 7th " Old Melb Rd, Morwell near Latrobe Road.

2000 Dec 3rd Flowering in Sweetwater Ck. Reserve.

Cerastium glomeratum Mouse-ear Chickweed

1994 Oct 28 Growing in Tigon Sth Reserve.
Oct 30 " " Dawson Water Reserve.
1994 Oct 12 " " Mr Heddrick
1995 Oct 25 " " " "
2000 Oct 12 " " Railway Reservoir Reserve, Tigon.

Chamaescilla Corymbosa (Blue Star)

1966 Oct 8th Flowering along Callignee Sth Rd.
1967 Oct 2 Flowering at Chester Park.
Oct 22nd " at Clark's Rd.
1968 Oct 20th " " " "
Nov 10th " Clark's Rd
1969 Sept 4th " at Wilson's Prom.
Oct 18th " Rosedale.
1971 Sept 3rd Plants growing in profusion in the heathlands in the Grampians and also at Mt Arapiles but no flowers.
Oct 24th Flowering at Reid's Corner
1979 Sept 6th Recorded with Dr. Parsons for X.
1994 Oct 28th Flowering in Tgon Sth Reserve

austrotenuifolia

Cheilantes (tenuifolia) Rock Fern

1966	June	Granite Rock.
	?	Stoney Creek - Conroar
1970	Jan 15	Nicola Road.
	Oct 11	Heyfield.
	Nov 25	Briagalong
1971	Sept 2	Flat Rock, Rose Gap Mt Zero Mt Arapiles and other areas in Grampians. Lovely tall specimens.
1972	July 9.	Billy Goat Bend.
1994	Oct 30	Dawson Water Reserve.
	"	" R'view "
1994	Nov 9	Found on Licola weekend. Thought it may have been the N.S.W. species because of the shape of the short frond but it was actually a young frond of this species. We had never seen a small frond before.
1990/1	Oct 12	Mt Hedrick
1995	Oct 25	" "

Cheilanthes distans Bristley ~~Blanket~~ Cloak Fern.

1970 Jan 3rd Growing at Burgoin's Gap.
1994 Nov 9th Nicola weekend.

Cheilanthes sieberi Narrow Rock-fern.

1993 12th Feb. Plant growing at Fulham on railway reserve near turnoff to passengers terminal on road on northern side of railway line. Plant growing in Casuarina woodland on southern side of railway line. New record for T. Frond of fern much narrower than ordinary Rock Fern C. tenuifolia. All fronds present were fertile but couple of dried fronds too. Apart from narrow fronds & with short pinnae well separated, rachis had scattered hairs & scales on the very lower part of rachis and the rhizome had short dark central streak going app 2/3 of scale. Fronds were clustered near tip of rhizome. Stipe reddish. Pinnules deeply lobed with short terminal segments. Sori on each small lobe - continuous only on lobe & lobe recurved at maturity of sori. Sent specimen to Dr Parsons.

1994 Nov. Found more plants in the more open part of the Casuarina Reserve Fulham.

1994 Nov 9th On Licola weekend.

1999 Jan 23rd " ~~Edgman~~ Cielantipy weekend. Identified from specimens brought back.

Chiloglottis cornuta (Green)

1967 Dec 29th Flowering along road to Erica car park.
1969 May 2nd Many leaves at South Cascade that we think could possibly be this plant.
1970 Jan 15th Flowering at Tamboritha Saddle.
Nov 23 In bud at Lily Pily Gully
1971 Jan 17th Flowering at Springs near Mt Useful.
Jan 30 Plant at Howitt Springs
1979 Nov. 24th Flowering along track in forest at Bulook (Mack's Creek headwaters) Many plants all in flower, leaves with netted veining
1989 Nov 27th Flowering along track that goes from Tarra Valley to Bulga Park. Many plants in flower but flowers not opening wide. These flowers had much more brown veining(?) in them than we have usually seen.
1994 Jan 16th Flowering at Mt Erica & Mt St Gwinear.

Chiloglottis Reflexa.

1966 Flowered profusely this year. Flowered in March. Saw many seed pods in Lakes Entrance Area.

1967 Jan 15th Flowering on Walhalla Rd near Anderson's Track.

Scape: 9.5 cm

Dorsal Sepal:- 1.5 cm green tinged with red, shaped like a spear head, recurved slightly.

lateral Petals:- 1 cm long 5mm wide green tinged with red. Hangs down near ovary.

lateral Sepals:- 1 cm long curved back to point to ovary. Tinged with red.

labellum:- 1 cm green tinged with red, heavily covered with stalked calli with a large callus pointing towards base of labellum. Another large round stalked callus in the middle of calli.

Column:- Green, 1 cm, winged. Dorsal sepal leans along column.

leaves:- 2 only 3 cm green with prominate vein + often wavy edged.

Bracts:- one, green, stem clasping.

Ovary:- 1 cm, lightly veined.

1967 Aug 20th Mr + Mrs Carr of Warragul found orchid flowering in Traralgon 3th Reserve

1968 April 16th Flowering in A.P.M Reserve.

June 16th Still flowering at Tigon 5th Reserve. Beautiful big specimens.

July 9th Still flowering in APM Gully. Had found specimen flowering in amongst the pines. It was a little paler in color. Later found others normal in color.

July 21st Still flowering in A.P.M. Gully + T.S. Reserve.

1965 Aug 1st Still flowering in A.P.M. Reserve.
1969 Feb 20th Flowering A.P.M. reserve.
Mch 30th " in APM Pines at side of Cochrane's lane. Many flower upto 5" high. Leaf stem clasping but the back calli on labellum was bifid. On both specimens we brought home. One specimen had a thin hairlike green growth from labellum up between the two lobes of calus. Glands on tongue stalked. Plants under pines with many flowers but plant out in open no flowers at all.
Apr 14th Sent plant of above flowers to the Herbarium by Miss Galbraith. The specimen I collected had the appendage (?) rising between the bifid gland + had a head on it. (Could this be another anther?). Herbarium said variable plant though Mr Muir + Mr Willis had not seen this variation
Apr 28th Plants under pines almost finished but plants in open commencing to flower
May 31st Still flowering in A.P.M. Res.
Aug 15th " " " " many flowers at end of July but still a few now.
1973 Aug 14th Flowering in APM reserve.
April 21st " " T'gon 5th Whitelaw's Track
2001 Aug 27th Growing in Newborough bush.

Chiloglottis X pescottiana.

1991 Sept 5th Flowering with many plants at the end of the South-west Arm walking track beside profusion of C. trapezeformis. Ollie photographed.

1994 Oct 28th Leaves in Tgan Sth. Reserve.

Chiloglottis trapezeformis

1969 Nov 2nd A couple of plants in flower but most of the plants in seed.

1978 Jan Chiloglottis pescottiana is hybrid between C. trapeziformis + C. Gunnii. D. L. Jones [C. Beauglehole + R. Parsons]

1991 Sept 5th Flowering near end of South-west Arm mallacoota walking track. There was a profusion of plants here + right beside, but not amongst them, was C. pescottiana. Ruth Clark identified them. Olle photographed

1991 Oct 12th Many plants flowering on Mt Hedrick on both the up track & the return trip.

1990/1 Oct 12 Mt Heddrick

1995 Oct 25 Flowering on Mt Heddrick

2006 Sept 29 Mt. Heddrick.

Chiloglottis (Gunnii) valida

1966 Sept 18th Flowering opp O. Lades.
Nov 19th Still flowering along Clarke's Rd.

Leaves:- 2 only opposite
Flower:- Green to maroon. Scape approx. 2" high.
Dorsal Sepal:- Vertical, broad & pointed
Lateral Petals:- Vertical, broad, pointed but at right angles to Dorsal Sepal.
Lateral Sepals:- Narrow, pointed, horizontal.
Labellum:- Similar to dorsal sepal in shape & size but horizontal with black glands. One gland larger stemmed & pointing into centre of flower.
Column:- Close to dorsal sepal, winged from point with sticky circle under lip of column.

1967 Oct 1st Flowering in our ~~pt~~ brush paddock
1968 Sept 17th " " Shingle Ck. Reserve.
Oct 20th Still " " " "
Nov 17 " " at Dead Horse Gully. Plants very brown in colour hardly any green but in shady place with lots of dead leaves etc.
Dec 22nd In seed in Morwell National Park
1969 Jan 5th Seed pod 1ft high.
Oct 4th Flowering at Burgoin's Gap.
19th " " Shingle Ck Res.
Nov 2nd " " Briagalong.
1970 Jan 1st " " Tamboritha Saddle - particularly large specimens. This could have been the season as Miss Galbraith reports large specimens from Mt. Skeen.
Jan 24th Flowering on Rocky Plains, Wulgulmerang.
Sept 13th " opp. C. hades.
19th " " "

1971 Jan 17th Flowering on Connor Plains Road past Mt Useful. Very big specimens thought they were even bigger than those last year at Tamboritha. Is this another good season or do these orchids grow much larger in the alpine areas.

Jan 30 Flowering on Mt Howitt Hike.

Oct 17th " at O. Lades

23rd " in Morwell Nat Park

1972 Feb. " at Mt. St. Gwinear.

1973 Aug 4th " in APM reserve

1995 Apr 12th Growing in Drouin Water Reserve.

1994 Nov 9th Flowering on Licola weekend

1995 Jan 15th " " Dargo "

1997 " 18th " " Mt Baldhead - Mt Nugong.

1998 In Muelleria Vol. 10 1997 Jones has another species of Chiloglottis C. jeanesii which is a mainland species with three [illegible] at base of labellum & a smaller flower than C. valida

1999 Jan 23rd Recorded on Gelantipy weekend.

2000 Dec 3rd Flowering in Sweetwater Ck Reserve.

2001 July 11 Slide 417 may be Chiloglottis jeanesii because of its greenish coloured flowers & flowering Dec - Feb. Dorsal sepal almost hugging column. Think this slide may be taken in alps.

2004 Apr 3 Leaves growing on Colley's Rd. Block.

Chionogentias muelleriana (now C. aff- diemensis)
(Gentianella Diemensis)

1967 Feb 6th. In bud but only one flower open at Erica.
1968 Jan 15th Flowering at Baw Baw. White or really cream cup-like flowers with many purple veins, stalks leafless and in some places in clumps. Few leaves oval and up to ¾" long; basal,
1970 Jan 24th Flowering at Wulgulmerang.
1969 Nov 23rd " in profusion at Mt Baw Baw.
1971 Jan 17th Found only one flower open at flat before final climb to Mt Useful, but there were many buds.
Jan 30th Flowering at Howitt Springs and on Mt Howitt Hike.
1972 Feb. Flowering at Mt. St. Gwinear.
1973 Jan 26th " " Mt Baw Baw
1989 Jan 14th " " Wulgulmerang. Specimens were almost finished flowering. Plants tall about 18" high. Flowers branched in loose terminal erect clusters.
1992 Jan 26th Saw very few flowers on Bogong High Plains.
1997 Jan 18th " " " " Mt Baldhead.
1991 Jan 28th " " " " on Gelantipy weekend on Rocky Plain & Emu Plain.
1999 Jan 23rd-24th Recorded on Gelantipy weekend.
2003 June Name change in 7th ed. of Census

Choretrum glomeratum / ~~pauciflora~~

1970 Jan 24th Flowering at Wulgulmerang. New plant for this area. Max found it. Bush about 3 ft high, appears leafless but on closer inspection small scales can be seen on young growth. Miss Galbraith says stems are square. Flowers tiny white about 1-2 mm across 5 petals with tips turned inwards although could spread when fresh. Flowers appear single but making a loose raceme on end of branches. Calyx forms a cup for the petals. Backs of petals have reddish appearance.

Miss Galbraith says this plant was wrongly identified as all specimens of C. pauciflora had square stems on drying.

Also I thought flower arrangement did not agree with Black's description of C. glomeratum Henry of C. pauciflora flowering in the Wulgulmerang area but with round stems. Miss Galbraith thinks Max's plant was probably in a dry area.

1971 May 14th In bud. along Harrup's Highway past Kangaroo Swamp Road - about 1 Km.
Also in Traralgon Sth reserve.

Choretrum (lateriifolium) pauciflorum Dwarf Sour-bush

1967 Oct 13th. Flowering at Habertouche. Very like Cherry Ballart.

1968 May 12th Flowering at Ceilingdale run. Or at least in bud.

Flowers of this genus have inferior ovaries and Miss Galbraith says scales behind flowers are very easily seen.

1997 Jan 18th Growing at Livingstone Ck near Omeo.

1999 Jan 23rd " on Celantipy weekend. Identified from specimens brought back.

2005 Jan 24 Members brought back specimen from Errinundra weekend.

Chrysanthemoides monilifera Bare seed.

? Growing at Corrigan Rd. Reserve.

2001 Dec 1. " " Sandy Ck. Bush. Newtonrough.

Chrysocephalum apiculatum + C. off apiculatum.

Helichrysum Apiculatum (Common)

1966 Nov 20. Flowering at Seaspray. (Mrs H. Johnson brought it to us)
1968 Oct 13th " at Flynn.
1972 Jan 6 Dad brought home from along railway line near Morwell. Exactly fits description in Black.
1976 Sept. Flowering near Lake Glenmaggie
1979 Nov 26th " along Railway Line between Flynn + Loy Yang R'way station. Involucre bracts ciliated + leaves cottony on both surfaces and golden flowers in clusters.
1982 Aug. Flowering at Boisdale
1994 Nov. 1. " " Casuarina Reserve Fulham.
Oct 30 " " Dawson R'way Reserve.
~~1995 Dec 19~~ " " ~~Railway Line Reserve T'gon~~
1996 Jan 20th " " Mt Hotham weekend.
1995 Oct 28th " " Wonthaggi Heathland.

chrysocephalum baxteri.

(~~Helichrysum~~ Baxterii) ~~Obtusefolia~~ (White)

1966 Sept 19th Most plants in full bud but a few flowers fully open
Flowering along Racecourse Rd., Rosedale.
This specimum probably H. Obtusifolium

1971 Sept 2nd Flowering at Mt Zero area. This specimen had the fringed ray florets so we feel happier about the identification.

1991 Oct 12th Flowering at Mt Hedrick

1995 Oct 25th " " " "

Chrysocephalum semipapposum (Clustered)

(Helichrysum ~~Apiculatum~~ Semipapposum ~~Common~~)

1966 Sept 17th. Flowering along Racecourse Rd. Rosedale. Very small flowers. leaves very grey.

Sept 25 Flowering at Stony Creek much larger than the above. Flowers varied from orange to bright yellow

1967 April 16th " along Clark's Rd. - not very prolific.

Nov 5th " at Stony Creek. green leaves supposed sticky or grey leaves not sticky.

1968 Sept 3 Flowering at Stony Cr. Caiwarr.

15th " in Coonmandale Reserve

Dec 29th " on road past Walhalla.

1969 Feb 1. " at Tyers

Oct 4th " along Licola Road.

19th " Clarke's Rd.

1970 Jan 1st " at Licola. + Tamboritha Saddle

Oct 19th " Briagalong.

1971 Jan 30th " Howitt Springs. Leaves very grey flower heads small. Leaves with one big leaf narrow lanceolate + entire with also from same position is another 1 or 2 leaves much dissected right to midrib in about 4-5 segments.

Aug 28th Flowering at Wildflower Sanctuary at Strawell.

1972 July 22nd Plant growing in Fairy Dell.

1992 Jan 25th Flowering around Angler's Rest

1994 Oct 28 Recorded in Dawson # R'way Reserve

Nov 9th " on Licola weekend

1995 Jan 15th " " Dargo "

1995 Oct 15 Flowering along Clark's Road. Leaves very green + sticky + hairy on both surfaces. decurrent. Difficult to key out as apparently a variable plant. Willis says it varies

considerably in leaf-size & degree of haininess. And he thinks this species may not be specifically distinct from C. apiculatum

1995 Dec 19th Growing on Railway line Reserve Tigon.
1996 Jan 20th Flowering on Paw Paw Ram area on Mt Wotham weekend.
1995 " 18th " " Mt. Baldhead near Omeo.
1999 " 23rd " " Cielanlipy weekend. Identified from specimens brought back

2001 Oct. John Top brought specimens - one grey & the form we are used to ~~bat~~ and another that looked quite different with bright green sticky leaves. Flowers not mature enough to work on achene & pappus, so sent to Neville Scarlett. Answer back says both same species at present, needs lots of work on this complex & C. apiculatum which is also similar but another complex.
In "Flowers of Victoria" Jeans mentions the two forms.

*

Cicendia filiformis — Slender Cicendia

1994 Oct 28th Flowering in Tigon Sth Reserve
Nov 1. " " Casuarina " Fulham

Don't know why I haven't had a sheet for this plant before as it is fairly common in damp areas in this part of the State.

Oct 30 Flowering in Dawson R'way Reserve
1995 Dec 19th " " Railway line Reserve Tigon
Oct 28th " " Wonthaggi Heathlands.
1999 Oct 23rd " " Cicillion's Run.
2001 Nov 3 " " Newborough Bush
Dec 1 " " " Sandy Ck.

Cicendia quadrangularis Square Cicendia

1994 Oct 3a Recorded in Dawson R'way Reserve.
Again have found this plant in many places
before but not as common as C. filiformis.

*

Circium vulgare — Spear Thistle

1994 Nov 1 — Growing in Casuarina Reserve Fulham.
Also grows along Downies lane T'gon Sth
Dec 30 — Growing in Dawson Water Reserve.
" " " " R'way "
1995 Apr 12" " " Drain Water "
Dec 19 " " Railway line Reserve T'gon
2002 Nov 14 " " " Reservoir " "

Jungle Grape

Cissus hypoglauca

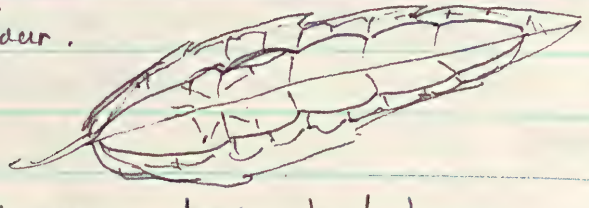
Water Vine

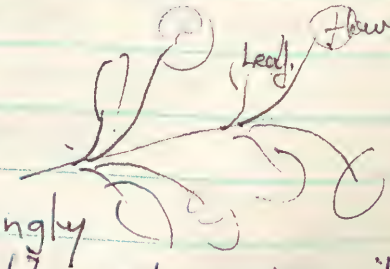
1972 July 29th Vine growing in Fairy Dell

1993 Jan 31 Plant growing + flowering profusely on roadside between Club Terrace + Combienbar. Paul photographed flowers. Leaves are in threes.

Clematis Aristata

1966 25 Sept Flowering at Stony Creek
16 or 2nd " opp Mrs. O. Lades
Nov 20th In seed at Cowarr.
1967 23 Sept Flowering and few seed along Blackwarry Scenic Rd.
22nd Oct Flowering Cormandale Rd.
Dec 29th " Erica Rd.
1968 Nov 17th " ~~Otard~~ Shingle Ck. Res.
1969 Feb 1st In seed. at Tyers.
Aug 29th Flowering on roadside near Granite Rock
Nov 2nd Flowering at Stony Creek.
1970 Jan 26th " " the Cobberas.
Sept 15th " " Traralgon South.
Oct 11th " " Heyfield.
Nov 23rd In seed at Lily Pilly Gully.
1971 ~~Oct~~ 23rd Flowering in Morwell Nat. Park.
1972 Jan 30 Plant growing in Bryce's Gorge.
July 22nd " " " Fairy Dell.
1988 Oct 20th Flowering opp. O. Lades. Leaves dull and toothed Sepals creamish Flowers mostly all male or all female. Anther appendages elongated along ——. Veins on leaves indented but same colour.





Flowers from leaf bases singly
Anther is not dilated from filament, rather it appears to have a cover for ¼ - ⅓ length of filament. Stamens very golden colour.
1993 Jan 30 Plants in seed in Errinundra N.P.
1994 Nov 1. " " " " T'gon Sth Reserve.

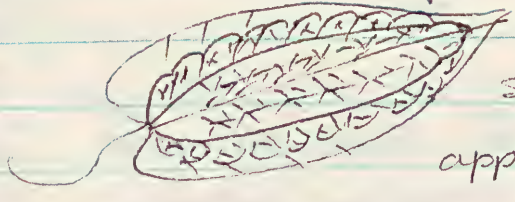
1995	Apr 12th	Growing in	Drouin Water Reserve
1997	Apr 5th	" "	AFM Reserve - Grand Ridge Rd.
2000	Dec 3rd	" "	Sweetwater Ck. Reserve.
2001	Dec 1	In seed in	Sandy Ck Bush, Newborough.
2004	Apr 3	Growing on	Colley's Rd. Block.
2006	Spt 30	" "	Seneins Track
	Nov 4	" "	Springsure area.

Clematis glycinoides

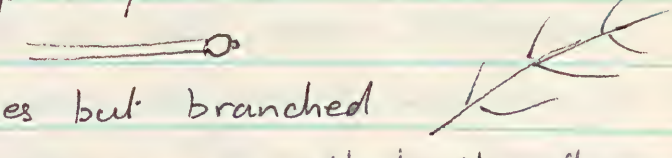
Forest

1965 Oct 13th Flowering in bush just before Stoney Ck. near Acacia decurrens. Softer than the common clematis. Leaflets barely stalked and shining green slightly lighter in color than aristata.

1969 Oct 1st Flowering at Conwarr.
" 18th " " Rosedale.
Dec 8th " " Teeralang Rd.
1970 Oct 17th " " Briagalong
1988 Oct 20th " opp. O. hades. Leaves shining green, veins lighter colour so more obvious. Veins also reticulate especially in central section. leaf margins entire, or just a few dull separated teeth. but wavy, much thinner & narrower. Stalks of leaves of both species long.



Sepals white narrow shorter than C. aristata. Anther appendages short & round



Flowers from leaf bases but branched

ID appeared in our specimens that the flowers were in threes at end of stalk. Anther is expanded on filament to be rounded or elongated with appendage like a little pimple.

1994 Apr 15th Growing in Drouin Water Reserve
1994 Nov 9th Recorded on hicola weekend.
1990/1 Oct 12 " " Mt Heddrick
1995 Oct 25 " " "
2001 Dec 1 " " Sandy Ck. Bush, Newborough.

sp.

Clematis microphylla

1968 Sept 3rd Flowering on Licola Road. Tiny flowers with many stamens + long petals.

1969 Aug 16th Flowering at Wilson's Prom. The leaves of the Licola specimens were very fine + feathery but at the Prom. the leaves were much more developed like in the wildflower book. However Miss Galbraith has plant from Licola + it's leaves are same as Prom variety leaves.

Oct 14th Plants with both flowers and seeds on them growing along Licola Road.

Nov 2nd Flowering at Briagalong

1970 Jan 2nd Plants in seed along Licola Road.

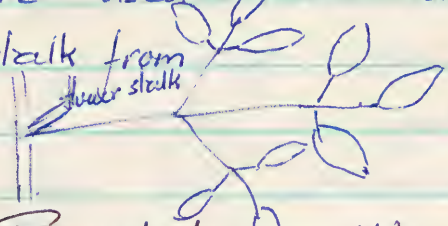
1971 Sept 1st Flowering throughout the Grampians

Aug 22nd " at Loch Sport.

1972 " 23rd " " Mt Arapiles.

1979 Sept 6th Recorded with Dr. Parsons for X.

1986 Aug 19th Collected specimen in bud near McGauran's Beach. leaves were not nearly so fine as we are used to at Prom. Flowers on separate stalk from



base of stalk to leaves. No leaves on flower stalks only bracts at base of buds.

1995 Oct 28th Recorded on Wonthaggi Heathlands

1999 Jan 23rd " " Celebration weekend. This was Clematis microphylla. var. leptophylla. Identified from specimens brought back.

2003 June Name change in 7th edition / Leaves 2 sp. first with 12-15 leaflet. Second with 18-24 leaflets.

Colobanthus affinis Alpine Colobanth

1991 Jan 30th Flowering on the plains at Howitt Springs.
Plant approx. 6 cm high.
Leaves densely tufted, pale green grasslike
about 3-4 cm long tapering to a point.
Flowers on long straight very pale stalks
about 6 cm long. Flowers about .5 cm
across. Consisting of calyx with 5 sepals
almost rounded at the apex ∩ and alternating
with the segments of the capsule or cup
inside the sepals. Sepals about half the length
of the cup segments. Cup consist of
five segments more pointed than sepals
and almost transparent, not divided very
far down. Inside the cup are app.
10 anthers on white filaments which appear
to be straight. Anthers pale brown.
Cannot see the style but there are
many curling white filaments with apparently
nothing on the end, these curling filaments
appear to be almost all on one half of the
cup though the anthers are around in
a circle. I feel the curling filaments
may be attached to the style
Flower stalks erect well above leaves.

1995 Jan 15th Flowering on Dargo weekend.

Colobanthus apetalus (Coast)

1971 Jan 30th Flowering on Howitt Plains. This is a tiny plant with leaves about ¼" to ½" long with very pronounced + thick to tapering point at apex. Leaves appear to have a transparent margin to them. Margin much more visible if viewed from back of leaf.

Flowers on short stalks and were no taller than leaves. The calyx lobes appear to be almost as long as the capsule segments and tapering to a point. Number of lobes + segments 5.

Comasperma. Calymega. (Blue-spike Milkwort

1967 Jan 14th Flowering .8 mls from Early Road along Anderson's Track. Day sunny & humid - lots of flowers but next day when wet couldn't find one flower in same place

1969 Feb 28th Flowering Calignee Rd near P. Monnisii

1969 May 10th " along lime-pit Rd. Rosedale - only saw two plants.

July 26th Twining plant growing close to ground & erect stems not very long yet. Lots of buds but I think perhaps they may have been attacked by gall insects. Leaves alternate up to 20 mm long, erect stems from leaf base. Flowers appear to be in terminal racemes. No flowers yet. Seen at Parlamurla.

Nov 8th Flowering at Wilsons Prom.

1971 Jan 17th " along Mt. Useful road.

1994 Nov 26. Flowering in A.P.M. Block Stradbroke Sth. Cipps. Hway

1995 Oct 28th " - Wonthaggi Heathlands

Cinesperma defoliatum (leafless milkwort)

1969 Jan 26th found flowering just past end of our bush paddock. We hope identification is correct. Flower is about 18" high on thin straight rush like stem. More than one flower at end of stem like raceme not a cluster. Growing in damp area on side of hill. Apparently leafless but on close investigation under magnification the tiny scales on the stem can be seen; they look like tiny stipules broadest at tip. Capsule appears to grow a stem as it matures

when petals fall. more mature.

Flower is very like love creeper only slightly darker in color. We saw one plant with 2 flowers open at the same time, all the rest had only one flower open. We found about 12 plants.

Comesperma
(Bredemeyera) Ericinum (Heath Milkwork.)

1966 Dec 4th Flowering T'gon Sth Reserve
1967 Oct 1 In bud in T'gon Sth Reserve.
Nov 26th Flowering Bill Onley's Rd. 8ft high & quite sturdy. (near phlogopappa.)
1968 Nov 3rd Flowering along Senini's Track
1969 Jan 1st " " " "
1970 Jan 1st " " Licola Rd
" 18th " " Senenis Track.
1971 Jan 17th " " road to Mt Useful.
1994 Nov 15th " on Licola weekend.

Comesperma retusum

1970 Jan 24th Flowering at Wulgulmerang. Leaves yellowish green, rounded or obtuse at apex, stemless 7mm long x 2-3 mm wide, erect & hiding the stem. Flowers at ends of branches.

1972 Jan 30th Flowering on way home from Mt Howitt.

1989 Jan 14th Flowering at Wulgulmerang.

1991 Jan 28th In seed on Rocky Pain near Wulgulmerang. ~~Fruit~~ capsule ~~Seeds~~ arranged like a fan but sometimes about 12 seeds in one cluster. Actual ~~fruit~~ seeds arranged at top of ~~seed~~ fruit with pappus folded in tube; two seeds to each capsule.

1993 Jan 30 Plants flowering in Errinundra N.P.

1997 " 18 Flowering at Mt. Baldhead near Omeo.

1999 " 23rd Recorded on Cielantipy weekend.

Comesperma
(Bredemeyera) Volubilis (Love Creeper)

1966 Sept 9th Flowering Clark's Rd. A few isolated leaves present.
Oct 30th Still flowering.

1967 Sept 17 In bud near the big Red Beak patch in bush behind our place. We looked closer at the ground and found the dried stems of last years and the year before's flowers.
Sept 24th In flower near Cormandale
Oct 22nd Seeds on plant at Callignee 5th Rd. seeds thick with green flat ~~pods~~ capsules that looked like leaves.

1968 Sept 15th Flowering in Cormandale Reserve.
" 29th " in profusion on road to Patrson Downs.
Nov 10th Flowering Clarke's Rd
" 17th Seeds at Dead Horse Gully

1969 Aug 29th Flowering profusely at Ciranite Rock. lovely clumps of it with erect stems from creeping vines.
Sept 13th Flowering at Longford - Rosedale. Also found pink form at Holey Hill.
Oct 19th Flowering at Chester Park.

1970 Aug 23rd " at Cormandale.
" 23rd " at Holey Hill Trig Pt. both blue & pink varieties
Sept 26 Flowering near Chessum Rd Rosedale.
Oct 1. " new reserve Rosedale.
" 11th " at Heyfield
" 14th " Briagalong also the pure white variety

1971 Oct 10th Flowering in RPM reserve. Both blue & pink varieties flowering at Holey Hill Trig Pt.

1931	Oct 23rd	Flowering	in	Morwell Nat. Park
	24th	"		at Reid's Corner.
1932	Sept 10th	"		at Rosedale (Blue)
	10th	"		" (Pink)
1975	Aug 30th	"		" Mullundung.
1994	Oct 28th	"		" T'gon Sth Reserve.
1995	"	"		" Wonthaggi Heathlands
1990/1	Oct 12	"		" Mt Heddrick
2002	Nov 23	Growing	in	Hobby Plains State Park
2006	Nov 4	"		" Springsure area.

Conium maculatum — Hemlock

1999 Jan 23rd
Dec 15th

Recorded on Gelantipy weekend.
Noticed cow on Caldwell's property was eating the dried Hemlock although it didn't appear to attempt to eat it while green. In 'Poisonous Plants of Australia' it is stated that the alkaloids are volatile oily liquids and are lost ~~lost~~ by slow drying or boiling.

Conospermum mitchellii — Mountain Smokebush

1971 Aug 30th Plant in bud in Wonderlands area in the Grampians. Plant tall - about 4ft high at least, leaves about 11 cm long and 2 mm wide ending in small point. Main rein quite conspicuous. Flower stalks at end of branch, not down the branch. flowers in cluster on end of stalk up to 3 cm long. Stalk pale green hairy, buds grey-blue, very hairy. Each flower on individual stalklett < 1cm long. leaves much longer than the flower stalks so flowers appear amongst the leaves. Flowers white - hairy on backs of petals - three lower petals spreading - two top petals united - stamens black.

1972 Sept 1st Flowering in Grampians

Conospermum patens Smokebush

1971 Sept 3rd Almost in flower at Flat Rock near Mt Zero. Plant about 2'6" high. leaves about 15mm long, hairy, pointed & lanceolate. 2mm wide. Main stalk hairy. yellow & red. Flowers from top 3 cm of stalk from leaf bases but all reaching the same height to flower, so that lowest flowers have longest stems. Flower stalks & calyx is very hairy.

1972 Aug 30th Flowering at Gillan Gorge area. on gravel pit. Flowers smaller than C. mitchellii and bud very blue. Open flowers pale with pink also showing. A very colourful, delicate flower Photographed C.U.

1972 Aug 28th Flowering in Little Desert

spp

Convolvulus (erubescens) Blushing Bindweed.

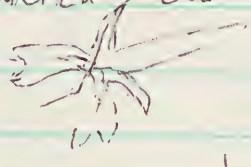
1970 Nov 25' Flowering at Briagalong.

1972 Aug 21' Flowering & in seed at Mt Krapiles. Stem twining together, leaves with just basal lobes. Thought it might be lesser Bindweed but calyx is hairy so this must be right identification

1992 Nov 3rd Flowering at Dawson reserve. Twining plant. leaves very long, up to 4.5 cm, but very narrow except at the base. Stem of leaf 4mm., width of leaf 2mm, except at base, margins curved upwards from midrib, glabrous above but tiny fine hairy underneath. lower section of leaf lobed

midribe

If flattened out



Flowers on long stems 3.5 cm. with two bracts about ± 1 cm from flower, stem hairy. Calyx bell-shaped, 5 lobed (pointed) and hairy. Ovary appears to have 2 broad sheaths at the sides and higher than ovary which appear glabrous. Flower ± 2 cm wide pink ~~bell~~ shaped. but open at front.

2003 Name change in 7th edition Cunn.

*

Conyza. bonariensis Tall Fleabane

1994 Nov 1. Growing in Casuarina Reserve Fulham.
1996 Oct 12th " " at Paradise Beach at 1st pipeline.
2000 Apr 11th " " Heyfield Wetland.
2002 Apr 2nd " " " "

*

Conyza canadensis Canadian Horseweed

1994 Oct. Recorded in Dawson R'way Reserve

2004 July 27 " " Brodrib Rd. Wetland.

primulifolia.

* Conyza (scabiosifolia) Rough Conyza.

1982 Jan 12th Flowering along the railway line between T'gon and Morwell - practically opp. the motel near the golf course. Flowers clustered in loose heads about ¼-½" across each flower - no ray florets but tubular flowers give it a yellowish colour. When flowers are mature they fluff up to 3 times the size ← the whole cluster almost meets. Achenes ribbed, rather flat with thickening at apex and with app. 16 bristles. Big leaves basal about 6" long with several rounded lobes, stem leaves narrow lanceolate alternate; hairy yellowish green. Stem ribbed and hairy. Basal leaf pimply on both sides. Tubular flowers female in outer area & bisexual in the centre. Bracts of involucre free, narrow, pointed in about 3 different lengths; hairy & very numerous. Plant about 3 ft high - flowers not all terminal, some down stalk at leaf bases.

Jan. 19th J. Cialbraith sent specimen to Herbarium and had reply today. Dr. Ross verified the identification and asked for details of where it grew and the abundance as soon as possible. Jean said the flowers had little white ray florets when they first emerged from bud. As our flowers were almost finished we did not see these florets.

1981. Appr. 4 Recorded with Dr. Parsons T16

1995 Dec 19 Recorded on Railway line Reserve Tgon

Conyza Sumatrensis Tall Fleabane

was C. albida.

2006 May 26th Wendy brought specimen from Landcare man. Separated it from C. bonariensis by the denser flower spike - more narrow & not so spreed with long branchlets.

Receptocal - structure on which florets are born showing after fruits have fallen off - ridged between minutely raised scars of fallen florets.

Inside of inner involucral bracts brown not pale.

Coopernookia barbata. Purple Coopernookia.

1984 Oct 5th flowering near Gipsy Point near Highway + Gravel Pit.
1985 Oct 5th " " - - - - - "

Also ~~collected~~ specimen on Geneva Peak track near car park. Did not key it out but assumed it was C. barbata as recorded there by Dr. Willis. However collected specimen on way back down track near dense area of Casuarina - stopped to see Glossy-black Cockatoos. Miss Galbraith thinks this specimen may be C. chisholmii. Her book says difference is mainly leaves - C. barbata entire leaves to 1½" x ⅛" with short glandular + a few stellate hairs, edges curled back. C. chisholmii leaves are flat, velvety with stellate + a few glandular hairs on one or usually both sides. C. barbata grows on dry ridges + heathlands while C. chisholmii grows in sheltered forest. Jean says C. chisholmii has irregular margins to the leaves which are robust, narrow elliptical, dentate with midrib definitely decurrent.

Coprosma. Hirtella (Rough)

1967 Jan 4th Flowering along Blackwarry Rd. Stamens grow long white hairy about ½" long. Also at Erica.
April 29th Red berries at South Cascade.
Sept 23 Flowering along Blackwarry Scenic Rd.
Dec 10th Flowering in bush paddock near Dead Horse Gully Male flowers drooping like raspwort only more stamens, and whole flower bigger.
1969 Febi" Berries on plants at Tyers.
May2nd " " " South Cascade.
1970 Jan 25th Flowering at the Cobberas.
1971 Jan 17th " on road back from Mt Useful.
Jan 30th " on Howitt Plains.
Aug 29th Plants growing in the Grampians.
1977 Nov 26th Plant growing at Mt. St. Guinear was a prostrate form growing under a rock ledge. Plant very rough.
1993 Jan 30 Plants in flower in Errinundra N.P.
1995 Jan 15th " " " on Dargo weekend.
1996 Jan 20th " " " Mt Hotham weekend.
1997 " 18th " " " Mt Baldhead & Livingstone Ck.
1991 " 23rd " " " Cielanlipy weekend.

Coprosma Nitida. (Shining)

1967 Feb 6th Flowering at Erica.

1968 Jan 18th Found plant by not in flower. Very like prickly coprosma but no spikes although branches were stiff + rigid. leaves slightly bigger + very soft. Wilted by time we reached home. Baw Baw

197x Jan 30th Plant growing on Mt Howitt Hike. leaves about ½" long and quite shiny on top.

'73 Aug 11th Plant growing in Boola Boola forest. Found only one light red small berry.

1994 Jan 16th Plant growing at Mt St Gwinear.

1995 Jan 15th " " on Dargo weekend.

Coprosma nivealis

1970 Jan 25th Flowering at the Cobberas. - woody + has narrow leaves.

1971 Jan 30th Plant growing on Mt Howitt Plains. Plant woody and leaves small but plant under leaves is spreading and many branches. Found one opaque berry.

1973 Jan 26th Plants with flowers & a few berries. at Mt Baw Baw.

1995 Jan 15th Plants recorded on Dargo weekend.

Coprosma (repens) (pumilla) perpusilla ssp perpusilla

1968 Jan 18th. Flowering at Baw Baw. Ground hugging plant. Leaves similar to mirror bush but very small smooth, shiny, oval. Flowers little yellow bells about 1/8" long with stamens and styles on separate plants. Stamens and styles at least twice as long as bells.

1970 Jan 25th Flowering at the Cobberas - Coprosma nivea. This plant is woody & has narrow leaves while plant at Baw Baw is almost succulent.

1971 Jan 30th Plants growing on Howitt Plains with red berries. Rather succulent like leaves plants growing along water courses.

1972 Feb. Plants growing at Mt. St. Gwinear.

1974 Dec 7th " " at Tamboritha - Bennison Plains.

Coprosma. Quadrifida (Prickly Currant-bush)

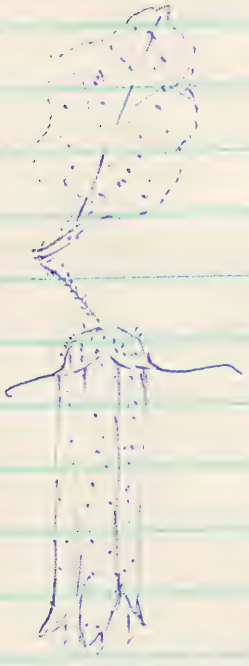
1967 Jan 21st. Flowering in bush above house.
1968 Feb 4th In Yerang Park, plants with orange berries on.
1972 July 22nd Plant growing in Fairy Dell.
1993 Jan 31. Plants flowering in Errinundra N.P.
1995 Apr 12th " growing . Drouin Water Reserve.
Jan 15th " recorded on Dargo weekend.
1997 Apr 5th " growing in HPM Reserve - Grand Ridge Rd.
1991 Jan 28th " " on Gelantipy weekend.
2000 Dec 3rd " " " Sweetwater Ck. Reserve.
2004 Apr 3 " " " Colley's Rd. Block.
2006 Sept 30 " " " Seconds Truck

Coronopus didymus — Lesser Swine cress

2011 Oct 2 Flowering at Heyfield Wetland. Foul smell.
Prostrate, leaves pinnately divided with 3-5 pairs.
Fruit bilobed, notched at apex, flowers very small, white

Correa aemula — Hairy Correa

1971 Aug 30th Flowering throughout the Grampians. Bushes about 2-3 ft high. Whole plant very hairy. Leaves opposite on short stems. Leaves 2½ cm by 2 cm pimply hairy above but woolly hairy below, green above but yellowish below.



Bells 3.5 cm long hairy on outside pale yellow with purplish stain, up to 3 bells from leaf base. Stalk to bell app. 12 mm long. Calyx spreading and tapering to long points - 4 points. Stamens just visible below bell. Leaves hang downwards, with large gap between pairs - app 4 cm.

1972 Aug 29th Flowering at Golton Gorge in Grampians.

Correa Alba.

1969 May 24th Flowering at Cape Paterson.
Spreading bush about 3ft high but could have been held up by the surrounding shrubs
Opposite leaves - ovate up to 2.5 cm by 1.5 cm. dark green - shiny above — whitish slightly hairy beneath. leaf stalks app .5 cm long.
Branches almost black.
Flowers at ends of branches on specimen singly & in pairs. Flowers stalks app 3 mm long very light green. Calyx similar to correa reflexa forming a cap light green, slightly woolly. 4 petals to flower & spreading & split almost to calyx; flower very open. Petals creamy white app. 1.2 cm long. Eight stamens one to each petal & one in each space; stamens dark & conspicuous. Stigma light green. Stamens & stigma shorter than petals. Flower very starlike. Ovary inside flower.
Aug 16th Flowering at Wilsons Prom.
1970 Mch 7th Flowering in heathlands and on beach near Waratah Bay & Sandy Point. Many flowers on plants.
Apr 26th Flowering at Screw Creek near Leongatha. Plants a lovely sight.
1995 Oct 28th Recorded at Wonthaggi Heathlands

Correa glabra.

1912 Aug. 27th Flowering at Mt Arapiles
Can't find specimen but as I remember it had a calyx that tended to be flattened a square, a bit like Cook's Hat.
leaves were nearly as wide as long and very dark green, almost glabrous above. Flowers were greenish because rolled at tips
Specimen identified by Miss Galbraith.
Branches brown with stellate hairs, young shoots covered with stellate hairs but mature leaves show tiny stellate hairs sparsely on the upper surface but under surface covered with short stellate hairs.
I have no description of this species so cannot compare although Churchill says it grows in the area.

Correa lawrenceana (Mountain C.)

1967 April 29th Flowering at South Cascade.
June 22nd " on Warragul excursion
leaves dark green shiny above, cream below covered with brown hairs. Stems brown covered with hairs. leaves opposite, young branches from leaf junctions. Flowers from leaf junctions. Calyx (brown) is like a bell cover over sepals and not divided. Flowers about 1" long noticeably ribbed, pale yellow, stamens and stigma clearly visible below bell. Large tree.
1969 May 2nd Flowering at South Cascade. Some stamens yellow, some green, filaments green on some flowers but very dark red maroon color on others. Red filamented flowers tend to be towards the tip of the branch. They could perhaps be ~~younger~~ older flowers. Flowers usually in pairs on this tree. Stamens at an angle to the filament ½.
1971 Sept 21st Flowering at Toronga Falls.
1972 Aug 1 " at Lyndon Park.
1993 Feb 13 " at Tanjil River near Dam Wall. I felt this was a low altitude for this plant
1997 Jan 18" Plants growing at Mt Baldhead near Omeo.
2005 Jan 22 Plants in flower at Errinundra Plateau with red

2005 Jan 22 flowers. Keys out to C. laurentiana var labradoreana. Members also collected greenish-yellow flowers too. Apparently variable plant as it comes in 2 places in the key

Correa Reflexa

1966 Flowering early July in reserve
Lovely Specimen near Barnes on Callignee Rd. Aug 27th.
June approx 14th ~~on~~ near Marlo the white variety of reflexa flowers profusely. Leaves above flower very noticeable. ~~The~~ leaves hairy and a yellow green.
June 16th Variety at highway end of Osler's Rd has very hairy yellow green leaves. Spinebills were working flowers. Another variety at hill at back of Lakes Entrance more like the smooth leaved variety around home.
Oct 16th Variety Cardinallas flowering on Carmendale Rd. This variety has very broad bells.
Nov 21st Still flowering at T'gon 5th Reserve
Dec 11th ditto
1967 April 16th Flowering in T'gon 5th Reserve.
June 4th Bush in garden - probably variety Cardinallas - is very beautiful at the moment. It has had a few flowers for over a month but at the moment it has many many flowers.
July 24th Trip to Warragul & Laberkouche. Dad brought back specimen of white correa. Similar to plants flowering near Marlo - very hairy & the reflex leaves over the flowers very noticeable. Miss Galbraith says around Traralgon is the farthest west the red correa comes. White variety grows quite high - app. 6 ft.
July 19th Specimens of red correa found at Eden had the stamens & stigma noticeably protroding below the bell. Local flowers have these just protruding. The bells of the Eden specimens were very long approx 2 inches. (Photo taken).
Variety of red correa found on holidays looked exactly like white variety from point of view of leaves.

leaves were noticeably reflexed, yellow green + hairy above and more yellow underneath. Stems very hairy, appear to be in clumps of hairs.

(Queensland variety of Correa is yellow with very thin bells but the calyx looks just like a sailor's cap.)

Sept 6th Mr. J. Dwyer says a patch of red correa was found in the head waters of Bunyip Creek. Says Mr. Willis said it was unusual area for the red correa. Could be Correa Rubra

Sept 24th Still flowering in Cormandale Reserve.

Oct 8th Really beautiful. Ed in APM

13th White variety flowering at Labertouche.

Dec 31st Still flowering in Tyon 5th Reserve

1968 June 9th " " Rosedale Rd.

July 27th At gate on track W3 near Tyers River plant of Correa - Mr D. Chalmers says is C. reflexa v. rubra. Bells 3.5 cm long 7mm wide quite rough to touch. Final 7 mm of bell green, very spreading and reflexed. Stamen + sticky tip protruding more than local variety. Could be because bell tips turned back more.

leaves all in pairs. Pairs at bells completely protecting young buds + almost meeting below them. Also a single tiny leaf on ~~long~~ stem attached to stem of bell. These tiny leaves stand upright above bell. Larger leaves rough, deeply veined dark on upper surface - lower surface pale green with very short brown hairs over leaf but more dense on vein but still short. Stems green covered densely with short brown hairs, Calyx green densely covered with short brown hairs, like tight fitting cap on bell.

Correa Reflexa (cont) P3

1968 July 29th. Correa in garden (which is local variety) has rough leaves but much more shiny. Back of leaves is very similar to rubra. Two leaves at bud are not turned downwards but rather upwards. There is no tiny leaf on bud stalk. Bell is approx same length but much wider 1 cm wide and although green tip of bell is almost 1 cm long and curved at same angle as rubra the stamens ~~sticky~~ are only as long as the bell & visible through caps not underneath. Leaves are darker too. Stem is almost dark brown & not hairy. Bell widen & then narrows a little towards end. Very small leaves almost circular.
Calyx the same. Sticky-tip inside bell, shorter than stamens (I think)

Aug 10th. Correa plants on side of road appo. Cormandale Reserve very like plant in garden but the sticky-tip protrudes more than a ¼" below the stamens. Sticky-tip protrudes as soon as the bell is partly open. Stamens not below bell. No leaves on flower stalk.
Also in this vicinity is the correa reflexa v. cardinalis (I think). Bell is 4.5 cm long and 1.3 cm wide which makes a very thick bell. Green tip is appo. 1 cm long. This variety has two fine "leaves" about .5mm wide and about 5mm long just above bell these turn upwards in a curve. These tiny "leaves" are on all flower stalks and the stalks with very well developed bells also have two leaves 5mm long x 3 mm wide. Stamens visible below bells and sticky-tip a little longer. Leaves of shrub

3 cm long and 1 cm wide, very shiny on upper surface and hairs on undersurface very short & sparse. Stems red and hairy towards top but shiny lower down on bush. Two reflex leaves curved upwards.

1968 Sept 15th Flowering in Ciormandale Reserve
Oct 20th Still flowering Tgon 5th. Res.
Nov 17th " " APM Reserve.
1969 Feb 16th " " Rosedale
Apr 4th Plant growing in garden – again much of this plant died during Summer. Dad pruned it off & now rest of plant is growing quite healthily. Dad couldn't see any grubs etc that may have caused the trouble as this is the second year this has happened we wonder if this is usual for this plant.
May 15th Flowering at Willung South
Aug 3rd " " " "
Aug 16th " " Wilson's Prom - rough hairy leaf variety.
Oct 12th Flowering at Warragul area.
1970 March 1st Beautifully big bells flowering in Ciormandale reserve
May 25th Flowering at Ciormandale reserve
~~July~~ Aug 9th " " A.P.M. reserve.
" 23rd " " Ciormandale reserve.
" 23rd " " Holey Hill Trig Pt.
Sept 15th " " Traralgon South Reserve.
19 " " Chester Park
26 " near Chesum Park Longford
Oct 1 " new reserve Rosedale.
Nov. 25th " at Briagalong.

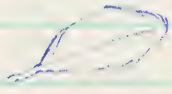
Correa Reflexa. P5.

1971 June 6th Flowering at Rosedale and also amongst the pines behind the sheds.

Aug 8th Flowering at Whitelaws Track T.S. Also amongst pines at Back of property.

Aug 15th Beautiful big bells on plants among the pines. Some plants are covered with flowers.

Aug 31st to Sept 3rd Plants with calyx's but no flower tubes. At Rose Gap Rd & other places in the Grampians & at Mt Arapiles. leaves very small up to about ½" long × ¼" wide



in pairs, smooth above & dark green but slightly woolly below & light green. Calyx with no points but square in shape. Bushes up to 3ft high, ruggy & spreading. Think this is C. reflexa but am not quite sure. Found one flower in specimens flower was creamy green with no turn back at end of bell. but it has two leaves at top of bell. Stamen stalks deep pink.

Sept. 19th Flowering in T'gon 4th Reserve.
Oct 10th " " A.P.M reserve & at Rosedale.
Sept 21st " at Toronga Falls - green variety
1972 Aug 27th " " ~~Mt~~ ~~Arapiles~~ in Little Desert.
Sept 10th " " Rosedale.
1973 May 13th " "

1993	Aug 4th	Flowering at Tgon Sth.
1975	Aug 30th	" " " Mullundung.
1989	May 11th	" " Boodyarn.
1994	Oct 28th	Plants growing in Tgon Sth Reserve.
	Nov 9th	Flowering on hicala weekend.
1990/1	Oct 12	Mt Heddrick
1995	Oct 25	" "
1998	Dec 12	APM. Block Stradbroke

HELMET ORCHIDS

Commencement of article on helmets in Sept 1931 Page 95 is good description of pollination of any orchid.

HELMETS. Platform between anther and stigma to prevent self-fertilisation by insect. Anther is translucent pearly arch with pollen behind. Cup-shaped stigma - upper part projecting into a sloping roof (rostellum) supporting pollen masses. Labellum bucket-shaped and filled with secretion from two strange appendages above. Bees fighting for places on smooth surface of bucket fall into liquid. In crawling through only exit, a narrow overflow spout, they cannot fail to brush against the reproductive organs. Pollinea, attached to a large gland, rest on posterior surface of a flat semi-circular rostellum. The attraction to the insect appears to lie in the column which, just below the stigma, swells out into a fleshy protuberance. A transver section shows this to be full of liquid which oozes out at a needle puncture. Scape can elongate to 12 inches or more in some species to assist scattering of the seeds, which are small enough to float on the air.

(Genosplesium archeri) Corunastylis archeri

Prasophyllum archeri

1970 Jan 24th Flowering at Rocky Plains at Wulgulmerang.
" 25th " " the Cobberas.
1972 Jan 30th " " Mr Howitt.
1989 Jan 14th " " Wulgulmerang
2003 June Name change to End of Census.

Corunastylis despectans
(Genoplesium despectans)
(Prasophyllum Despectans) (Tiny Leek)

1967 Jan 15th Flowering on hill above railway track on Anderson's Track. Tiny dark prune flower, very hard to see.

Scape:- 14 cm

Leaf:- absent

Leaf bract:- 1 leaf bract 4 cm below flower, very stem clasping.

Dorsal Sepal:- 2 mm pointing to ground. light maroon pointed .5 mm wide

Lateral Petals:- 2 mm pointed, light maroon, close to lateral sepals .5mm wide.

" Sepals:- 4 mm dark maroon, also pointing down, slightly curved up at tip, pointed. .5 mm wide.

Labellum:- very fine, pointed, 3 mm long, between two lateral sepals.

Column:- Maroon at base, Rostellum clear 1mm.

Column appendages:- like small petals, clear in color and crossed over centre of flower, lancelate pointed.

19 flowers on inflorescence. 2cm long. All round stem.

Ovary:- 3 mm long.

1968 Jan 22nd Has been flowering in garden for a couple of weeks. Has what appears to be tiny leaf about 1" high reddish on the left hand side of flower. Miss Gray thinks this may be next years flower. After flower last year plant developed long leaf, longer than scape, but at flowering time it was leafless.

2003 June Name change in 7th ed. / Census

Corunastylis morrisii
(Genoplesium morrisii)

(Prasophyllum Morrisii)

1968 Apr 14th Flowering at top end of bush paddock in crown land near road where track comes out.

Scape 11 cm. high no leaf. Stem maroon.

~~Dorsal Sepal~~: In specimen all the labellum were down so this interfered with the viewing of the whole flower. There were 7 flowers on the spike + all in a length of 16 mm.

Dorsal Sepal: Mostly greenish yellow with very little maroon on inside but back of ~~Sepal~~ quite maroon. ~~an~~ Ovate in shape coming in quickly to fine short point, margins maroon. Hairs on margin sparsely spaced and only really visible under the microscope. length of sepal about 5 mm + width 3-4 mm. Sepal is back so far as to touch the deep maroon stem of spike, in some flowers about ⅓ of it lies along stem.

Lateral Petals: Slightly darker than dorsal sepal and lined with maroon. Margins quite widely edged maroon. Difficult to measure length without destroying flower but probably entire length about 4 mm but half of this is long fine point, other part is about 2 mm + wide. Whole curving outwards + then inwards giving effect of cup with protruding point.

Lateral Sepals: Also hard to measure as there is abrupt bend in them whole moves so easily. I would say approx 6 mm long. Sepals united only at base + then spreading widely so as to be 5 mm apart at apex. These sepals are the darkest of petals + sepals

starting fairly narrow where dividing but widing towards centre about 1+mm wide at widest part (the centre). Then tapering gradually to a fine point but not a long point. Sepals point upwards, shape thus ⌒, bent about middle of sepal. No hairs on these sepals.

labellum: 5+mm long approx 2mm wide very hairy esp towards or moderately. the point. Hairs appear to become longer down the labellum + at end on side some particularly long ones but not many. The tip of the tongue is turned back for almost 1mm. When flower was found two of the labellum were in upright position but since lowered does not appear to be raising again. There are two flat, raised calli just before bend (darker than labellum) with two fine raised lines back towards base. The hairs are wavy rather than straight but very long ones straighter.

Column: Unable to see because of position of tongue but from side ∫ view it has two appendages very like elbow orchid. The top or anterior appendages are bifid, widely spreading with decided curve downwards. The bottom or posterior appendages also bifid but for not so long and separate points more ~~blunt~~ short & almost horizontal.

The appendages do not meet but rather are about 1mm apart.

Ovary: Deep maroon & grooved. slightly curved so that flower is vertical + not looking skywards. Small stem. Approx 5 mm long

(Cienoplesium morrisii) Corunastylis morrisii

Prasophyllum Morrisii (cont)

Stem bracts: One very small leaf bract about 3 mm long, 1.5 cm below flower.

Stem : G. Maroon at base - then green to bract but deep maroon from bract upwards.

Max pushed labellum of bottom flower up & it stayed in that position.

1969 Feb 20th Flowering in our bush but two days later they were eaten off.
Also plant in pot has put up flowering shalk. - no leaf.

Mch 23rd Above flower in pot in bud.
30th Flower half eaten up at bush.

2003 June Name change to Prasophyllum

(Genoplesium nudiscapum) Corunastylis nudiscapa.

(Prasophyllum densum) Dense Midge-orchid

1972 Jan 30th Flowering at Mt Hewitt area

June Name change to P. densum.

Genosplesium ~~orchen~~ nudum Corunastylis nuda

(Prasophyllum beaugleholei)

1989 Jan 14th Flowering at Wulguimerang. Dad took photography. Flower small + relatively simple for these small leek orchids. Stem stout + straight with few flowers. Stem became sturdier or thicker closer to the ground. Flower pretty reddish colour + nodding.

1999 Jan 23rd Recorded on Gelantipy weekend probably as above.

~~1999 Jan 23rd~~

2003 June Name change in 7th ed. of Census

Corybas Aconitiflorus

1965	Flowering	Forge Creek	June 10th
1966	Flowering	Oslers Road	June 15th.
2006	June 12th	Flowering Bald Hills	— Ralph Laby.
2006	June 15th	" Curdies	- Ralph Laby.

Corybas (Dilatatus) diemenicus

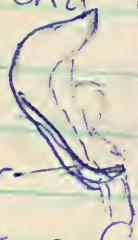
1966 Flowering Clarke's Road. July 3rd.
1967 July 23rd Flowering in A.P.M. reserve.
Aug 13th " in profusion & some spent flowers in bush opp. Mrs. O. Hades ~~on~~ the Calligree 5th Rd.

Scape 2.5 cm to top of flower.
Dorsal Sepal. 1.3 by 1.3 1.3 and 1.5 wide.
Can be dark maroon or almost transparent with maroon markings.
Lateral Sepals & Petals One set probably petals about 1 mm wide & clasping to flower. Other set sepals very fine about .5 cm long free & sticking out in front of flower parallel & hooked upwards. All four translucent.
Labellum: 1.2 cm wide with fringed border .5 cm wide. Border can be clear or maroon but is always striped with radiating lines to each point of the fringe. Edge noticeable toothed. Prominent white boss in centre. .7 cm wide but apex flat. Fringe around boss meets at top. The whole labellum is dilated

The whole flower looks very erect Dorsal Sepal if anything above the horizontal. It is very easy to see into the flower.
Orary: long & thin causing flower to stand above the leaf. Orary in vertical position also.
Leaf 1.6 cm wide & 2 cm long. Vein in centre noticeable & ending in fine point. light green both sides.

P.T.O

Dorsal Sepal (cont.) The lower end where it joins flower becomes clear



1969 Oct 22nd Plants in seed along Clark's Rd.
1968 July 21st Flowering opp. O. Lades. lovely big specimens.
" Aug 1st " " N.P.M. Reserve.
1969 July 28th " opp. O. Lades.
" Aug 3rd " Willung Sth.
1970 Aug 9th " opp. O. Lades.
1973 Aug 4th " NPM reserve
1994 Oct 28 Plants growing in T'gon Sth Reserve.

Corybas Fimbriatus

1965	Flowering	Lakes Entrance	June 10th
1966	"	Bennets Brook	June 10th
1969	"	at Wilson's Prom.	Aug 16th

Corybas (Piemenicus) incurvus

Flowering Clark's Rd. July 3rd 1966

1966 Sept 17th. Seed pod found Racecourse Rd. Rosedale
Oblong pod - perhaps oval would be better,
sitting right on leaf

1967 Aug 6th Flowering along Clark's Road
Scape 1.5 cm to top of flower.
Dorsal Sepal:- 2 cm long 1cm and 1 cm wide
Can vary from translucent to dark maroon,
if translucent then with maroon markings.
Lateral Sepals and Petals - much abreviated, transparent 4mm
long, close together curling upwards at base
of flower.
Labellum: 1 cm wide x 1 cm long - circular with
recurved edges. Maroon with large central
white boss with indention in top centre, deep
making edges pointed, edges of labellum minutely fringed.
Column: Can't be seen behind labellum. Don't want to
destroy flower.
Ovary: Short & fat causing flower to sit on leaf
Ovary almost horizontal
Leaf: 3.3 cm by 2.5 cm circular with indentation
at centre. Leaf glistens in light.
Leaf light green both sides,
Labellum (cont) Maroon circular border of labellum
touches at top of boss

Sept 24th. ~~Seed pods~~ along Clark's Rd.
Oct 1st " " in T'gon Sth. reserve.

1968 July 21st Flowering along Cochrane's Lane. First flowers found.
Aug 24th " in Cormandale Reserve.
Sept 15th " along Lime Pit Road + Cormandale.

1969 July 26th " opp. O. Leaves.

1969 Aug 9th Flowering at Rosedale
1970 Sept 26th Seed pod on plant among pines at Longford.
1971 Aug 5th Flowering at Whitelaws Track T.S.
Sept 15th " on Rose's Gap Rd in the Grampians.
1972 Aug 29th " in Grampians (Stollon Gorge)
Sept 10th " at Rosedale.
1990 July 22nd " in Natural bushland in Glenmaggie/Rosedale Area.
2006 July 31st " " McLaughlens Beach - Ralph Laby.

Corybas Unguiculatus.

1966 In bud. Osler's Road - no flowers June 10th

1966 Flowering profusely Osler's Road. June 15th.
Always found under Banksia bushes in our experience - usually Saw Banksia. Even at Marlo.

1971 Aug 22nd Plants with spent flowers in Lakes National Park - Loch Spark. Mr Willis felt sure these were unguiculatus. Growing under Saw Banksias.

1973 July 1. Flowering on sandstone ridge in Holey Plains blackt. under Saw Banksia.

Dorsal Sepal: Shorter than labellum almost semi-circular but contracting suddenly at back to give appearance of two colourless ears.

Lateral Sepals: Colourless straight about 1cm long spreading each side of labellum.

Lateral Petals: Shorter than sepals; finer + tending to curve.

Labellum: Half as long again as the dorsal sepal. Dilated in middle & contracting at both ends. Forms an elongated opening with Dorsal Sepal. Margin of labellum very finely toothed & with rows of very small cali inside lip. Also mass of cali extending from row to base of labellum spreading at middle.

Scape approx 2.5 cm high to top of flower. Flower sitting very close to ovary.

Leaf: Heart shaped with reddish tinge underneath + sitting slightly off the ground. Approx 2cm long + 1.5 wide. Flower looking over leaf.

Back view

labellum from side. top

Col.

1973 July 8th. Still flowering at Rosedale.
~~Aug 14th~~ July 16th " in Toongabbie North
1975 July 5th " in Morwell Nat. Park
1996 July 27th " " Tiriralgon Sth Flora & Fauna Reserve (1,000 acres)
on Kangaroo Track about 500m from car park.

Cotula Alpina

1967 April 29th Flowering at South Cascade - matlike plant with tiny yellow flowers like buttons.

1968 Jan 15th Found plant but no flowers. leaves much more robust than at South Cascade. leaves feathery like carrot leaves.

1990 Jan 4-9. Flowering at Mt Buffalo.

1992 Jan 25th " " Buckety Plain.

1993 Jan 31 " in Errmundra N.P.

1996 Jan 20th " on Paw Paw Plain on Mt. Hotham weekend.

1997 " 18th " - Mt Nugong.

Cotula Australis (Common C.)

1967 April 27th Flowering in bush above house. Parsley family much divided leaves little button-like flower on slender stalk. yellowish green. Spreading plant about 2" to 3" high. Can be weed of cultivation.

Dec 25th Flowering in Morwell National Park.

1968 Nov 23rd " " " " "

1971 Oct 23rd " " " " "

1982 Aug 21st " " Boisdale. Recorded with Dr. Parsons S.54.

Sept 5th Recorded with Dr. Parsons Gifford/Longford Rd. 1km past Bradleys Rd. X10.

1994 Oct 30 Growing in Dawson Water Reserve

" " " " Rway "

1995 Apr 12 " " Drouin Water "

1991 Oct 12 " " Mt Heddrick

1995 " 25 " " " "

1996 " 12 " " Paradise Beach at 2nd pipeline

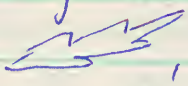
1997 Apr 5th " " APM Reserve — Grand Ridge Road.

2003 Apr 4th Flowering in Traralgon Railway Reservoir Reserve. Low plant, leaves much divided with irregular teeth, plants villous, pedunces slender but exceeding leaves by quite a lot at anthesis.

Cotula. bipinnata Feny Cotula (Introduced)

1973 Sept 7th Plant growing in Whipstick near Eaglehawk.

Cotula coronopifolia (Water buttons)

1969 Nov 25th Flowering at Yallourn North.
Leaves  , button hemispherical.
1995 Oct 28th Flowering at Wonthaggi Heathlands.
1996 " 12th " " Paradise Beach at 2nd pipeline.
1999 Jan 23rd " " Cikenantipy weekend. Identified from specimens brought back.
1999 Oct 16th Flowering in Bonlac Wetland, Darnum.
2000 17 Apr 11 " " Heyfield "
2003 Apr 4th Plants in bud in Traralgan Railway Reserve Reserve. leaves pinnatifid with irregular teeth, lower leaves oblong, involucral bracts more than 8. low shrubby plant with purple branches. Flowers almost sessile in branches of leaves. Growing around lake in mud where water has receded. Leaves toothed.

Cotula vulgaris (Slender)

1981 Dec 28th Flowering at swamp at Yallourn near pump station. heaves entire and flower with stalk about ½" above last tiny leaf.

Craspedia aurantia — Orange Billy-buttons

1994 Jan 15th Flowering Mt. Erica.
See also write-up on sheet Craspedia uniflora = C. glauca now C. variabilis

1995 Jan 21st Flowering on track to Mt Loch on Mt Hotham weekend

1997 " 18th Flowering on Bentley's Plain.

Craspedia coolaminica — Ashen Billy Buttons

1994 Jan 15th Flowering in sub-alpine area near Grant. Used key in Updake 3.6 and coincides with Flora of N.S.W.

leaves covered with long white hairs + with silvery appearance on both sides; tapering into long petiole. Peduncle with silver stem-clasping bracts. Flower 15 cm diam and orange.

1994 Nov 9th Recorded on Licola weekend.

Craspedia jamesii Green Billy-buttons

1995 Jan 15th Recorded x flowering on Pargo weekend.

Also see write-up on page under Craspedia uniflora = C. glauca ? now C variabilis

Craspedia maxgrayi — Silver Billy-buttons

1996 Jan 20th Flowering on track to Mt Lovet. This plant had leaves like Snow Daisy but wider.

1997 " 18th Flowering on Mt Ballithead near Omeo.

variabilis (I think)

Craspedia (Uniflora = C. glauca) ssp. (Billy Button)

1966 Sept 9th Flowering Clark's Rd.
1967 Feb 6th " Erica.
Sept 17 " up bush behind our place
Sept 28 " along railway line to Morwell
Oct 22nd " Clark's Rd.
1968 Jan 18th " Baw Baw. Flowers at least 1½" across and in some very easy to see male & female flowers.
1968 Oct 6th Flowering along Coll. Sth. Road.
Oct 20th " " " "
Nov 10th " " Clark's Rd.
1969 Sept 4th " at Wilson's Prom. Leaves seemed lighter & more bluish than I remember at home & flower not quite so dense.
Oct 12th Flowering in Warragul area.
1970 Jan 1st " at Tamboritha Saddle.
Aug 23rd " at Holey Hill Trig Pt.
1971 Jan 17th " at Mt Useful. These buttons could be different species. They were orange in colour with flowers forming tight spherical ball. Leaves large like blue pincushion.
Aug 28th Flowering in Wildflower Sanctuary at Stawell. Also in profusion in Grampians.
Oct 10th Flowering Coll. Sth Rd.
Nov 12th " at Flynn.
1972 Jan 30 " " at Hamitt Plains - lovely big specimens
Feb. " " Mt. St. Gwinear.
Sept 10th " " Rosedale.
1993 Jan 30 " in Errinundra N.P.
1993 Feb. or Craspedia glauca is now considered endemic

to NZ. and the Australian plants so named are divided into 9 species. See Update 3.6 for key.

1993 Dec 11th Collected flowering plant from Clark's Road & keyed it out to Craspedia variabilis in key in update and checked with description in Flora of N.S.W. Had some problem with hairs as specimen did not have a lot. Still key says "rarely glaberous". Our specimen wasn't glabrous but upper surface had very few hairs except on veins & undersurface had scattered glandular hairs. Leaves were more than 15cm long and 2cm wide at widest section but only 4mm at base. Head was globose and tight so that partial heads not easily distinguishable. Achene ± 2mm long + pappus bristles ± 16.

1994 Jan 15th Flowering on Mt. Erica. Using key on Tim Entwistle's Plant Updates I think we had both C. aurantia and C. jamesii.

C. aurantia has ~~orange~~ orange flowers. & C. jamesii has yellow flowers. Both have hairs on leaves & lower scape - hairs multicelled & key says rarely glabrous but some of the leaves were very sparsely covered with hairs. Colour diverentiates species. After colour, leaf not having long-attenuate at base C. aurantia. leaves spathulate, sparsely hairy Flora of N.S.W says with 40-90 partial heads; pappus with 14-19 plumose hairs.

C. jamesii. leaves not more than 15cm long, spathulate to linear ovate, hairy. Flora of NSW says leaves flaccid, base usually long-attenuate. 25-125 partial heads, pappus 14-24 plumose hairs.

1994 ~~Oct~~ Nov 1st Flowering in Casuarina Reserve Fulham Oct " " Dawson R'way Reserve.

Craspedia variabilis PS. Variable Billy-buttons

1995 Oct 7th Flowering at Dawson. Head globbose, leaves hairy, stem clasping, spathulate but rather narrow. Flower head yellow. Bracts at back of flower with long hairs on centre & top.
See also entry from Clarke's Road under Craspedia uniflora = C. glauca now C. variabilis

1995 Sept 30th Flowering at Edward Hunter Reserve. Moe.
1996 Jan 20 " " Track to Mt. Loch on Mt Hotham weekend.
2006 Oct 10th " Senenis Track.

Crassula decumbens. Spreading Crassula

1996 Oct 15th Growing at Paradise Beach at 2nd pipeline.

Crassula Helmsii (Stonecrop)

1967 Jan 14th 15th Flowering on railway line at Anderson's Track. Very tiny plant with long narrow leaves. Miss Galbraith identified.

1979 Sept 10th Recorded with Dr. Parsons for X but identification was C. macrantha.

1996 Dec 7th Growing in Railway Reservoir Conservation Reserve, Traralgon.

1999 Oct 16th Flowering in Bonlac Wetland, Darnum.

2003 Mch. Recorded in Eel Hole Ck/Cemetery Conservation Reserve Management Plan.

now peduncularis

Crassula (Bonariensis) Stonecrop

1970 Sept 26. Tiny red plants about ¼" to ½" across. Growing on side of road at Longford among the pines. Miss Galbraith said flowers had stalks.

Oct 11th Flowering at Heyfield. long stalks on flowers

1994 Oct 30th Flowering in Dawson Water Reserve Rivery "

Crassula sieberiana

1990	Jan 25th	Flowering at the Cobberas
1992	Jan 30th	" " Mt Howitt
1994	Sept 10th	Recorded with Dr. Parsons for X.
1990/1	Oct 12	" on Mt Feddrick
1995	Oct 25	" " " "
1999	Oct 23rd	Flowering " Clellion's Run
2001	Nov 3	" " Newlarough Bush.
	Dec 5	Recorded " Bob Johnson's Bush near Sandy Ck, Newlarough.
2002	Nov 30th	Flowering at Toongabbie Wetlands.
	Oct 5th	" " Crinigan Road Reserve

Crepidomanes

(Polyphlebium) venosum - Veined Bristle Fern.

1962	Sept 9th	Morwell Nat. Park.
1968	Feb 4	Yerang Park.
	Apr 7th	Cook's Reserve.
1969	Feb 9th	" with Bristles.
1970	Apr 18th	Glen Nayook " "
	Aug 29th	Darlamurla
1972	July 16	Tarra Valley.
1993	Jan 30	Errinundra or atleast Combienbar
2003	June	Name change in 4th ed. of Census

*Crepis capillaris Smooth Hawksbeard

1986 Dec. 27th. Flowering along track from front gate up into pines.
Tall herb 3ft high with branched flower head. Basal leaves with petiole app 17cm long with ragged appearance due to spreading lobes that are further toothed. Leaves pubescent with very short hairs. Stems of plant ridged. with stem. clasping leaves of similar construction to basal leaves. From each stem leaf there is a flower stem with further stem clasping leaves + then flowers. Flower head much branched into loose panicle.
Involucre cylindrical in flower but tapering upwards in seed — all covered with glandular hairs. Calyx with long teeth. Achenes cylindrical without beak, pappus of many white simple hairs. All flowers ligulate.
Good illustration in Black p. 943.

1993 Jan 31 Flowering in the Errinundra N.P.
1994 Nov 26 " " APM Block Stradbroke Sth. Gipp Hway.
1994 Nov 1 " " Casuarina Reserve Fulham.
1995 Jan 15 " on Largo weekend.
1996 Jan 26th " " Mt Hotham weekend.
2000 Apr 11th " " Heyfield Wetland.
2001 Dec 1 " " Sandy Ck Bush Newborough.
2004 Apr 3 " " Colley's Rd. Block

CREPIS

As per Willis except that *Crepis taraxacifolia* became *C. vesicaria subsp. haenseleri* but has since become *Crepis vesicaria* subsp. taraxacifolia.

C. capillaris is common around here and perhaps *C. setosa.*

Crowea exalata. (Small Crowea)

1969 Apr. 15th Flowering at Cooper's Creek.
1971 Jan 16th " in Garden.
1992 Jan 26th " on road to Bogong High Plains from Angler's Rest.
1994 Jan 17th Flowering along Thomson River upstream from Walhalla Road Bridge.
Nov 9th Flowering on Licola weekend.

Cryptandra amara

1969 Oct 4th Flowering past Glenmaggie on top of cutting. This specimen was mostly white. Also flowering at Burgoin's Gap but the specimens here were a lovely darke pink and the plants grew in profusion.

1994 Nov 9th Flowering on Licola weekend.

1990/1 Oct 12 " " Mt Hedderich

Cryptandra tomentosa

1970 Aug 23rd Plant flowering at Holey Hill Trig Pt. Flowers consist of hairy brown cup of bracts, then white tubular bell shaped sepals spreading at end. The actual petals are little tubes on ovary and spreading around the stamen - stamen black. Stigma same length as tube of bell. Disk at base of ovary not conspicuous. Leaves very hairy on both sides, dark above & pale beneath. Underside of leaves deeply grooved because of revolute edges of the leaves. Stems very hairy. Leaves sessile. Ovary rounded on top and not indented. Plants about 6" to 1ft high. Leaves about 8 mm long but not curling right round just revolute edges.

1971 Aug 28th Flowering at Wildflower Reserve at Stawell. This plant was very similar as I remember it at Rosedale. Also found on McKenzie Falls Trip in the Grampians.

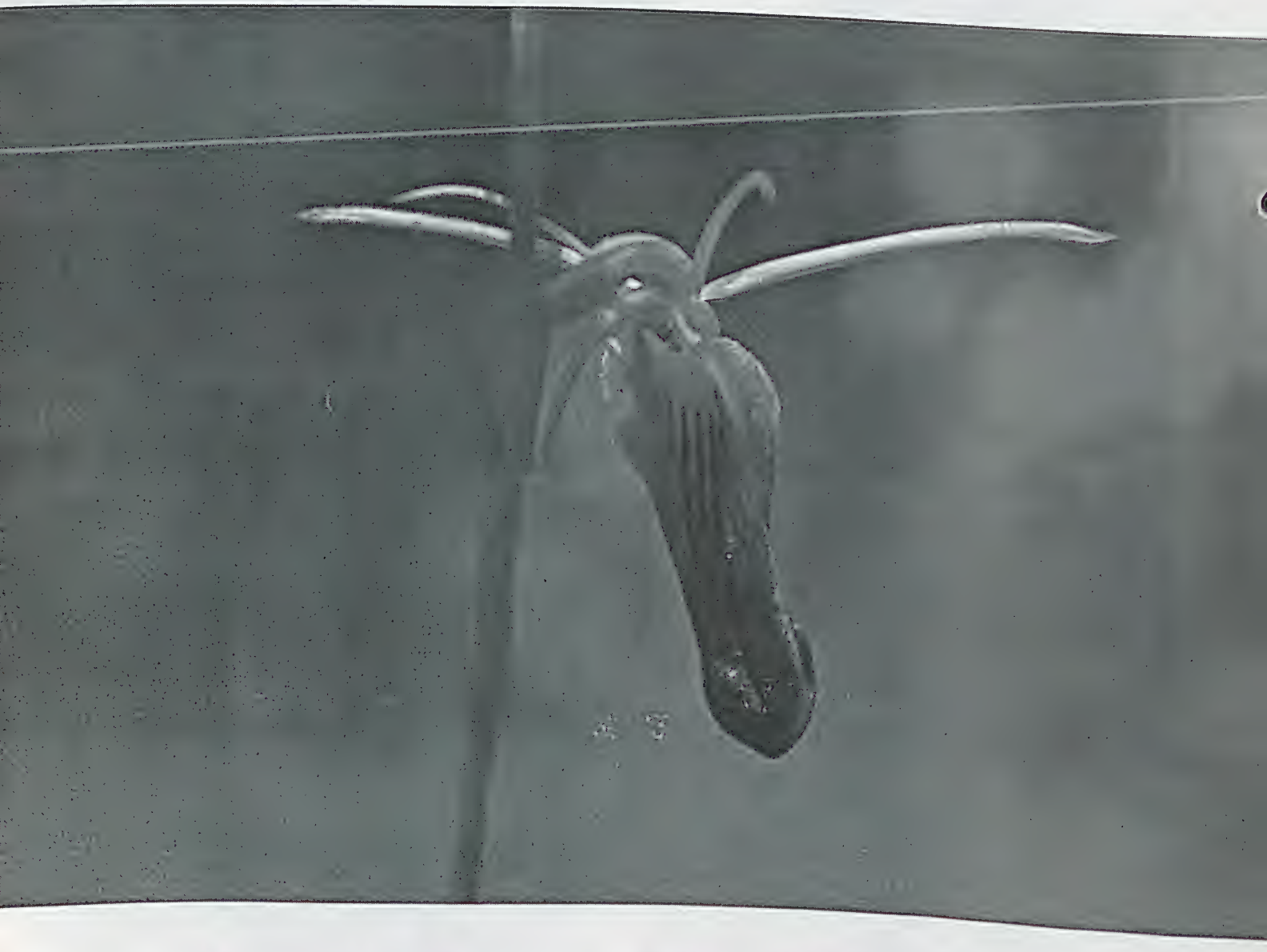
'72 Aug 28th Flowering at little Desert. Flowers perhaps smaller than at Rosedale but area very dry. Leaves of specimen 3 to 4 mm long.

Sept 10th Flowering in Rosedale.

1973 May 13th

1989 " 9th Plants in bud would expect flowering very soon - Holey Hill.

Edward Hunter Res
9 - Jan - 2005
Leptochila
Small Tongue Orch



Edward Hunter Res 9 Jan 2005
Moe
Cryptostylis subulata Large Tongue Orchid

Cryptostylis Leptochila (Small Tongue)

1966 Dec 29th Many leaves, quite a few buds but only one flower open. Perhaps just a little early.
At Darlamurla.

Scape :- 10 inches 9 flowers
Leaves :- one leaf - scape comes from centre.
Leaf bracts :- 2 very stem clasping, one near base, one halfway up.
Floral bracts :- one at each flower stalk, very stem clasping.
Dorsal Sepal :- 2 cm pointing to ground 1mm wide pointed.
lateral Petals :- 15 mm long 1mm wide, pointed, horizontal.
" Sepals :- 2 cm " 1 mm " " "
Labellum :- app. 2.5 cm long 5mm at base expanding to 9mm then contracting suddenly to 2mm approx 1 cm from base. 2 rows of 9 black sessile calli with black line between. Tip blunt. Beautiful deep red color. Labellum curls back until nearly forming a circle, going upwards from centre of flower. Labellum has deep lateral lobes for 1/3
Column :- green ± 2 mm Δ shaped at top but mass of clear substance underneath. 2mm deep. Δ shape is actually tiny green lid. Under lid is V pollen masses fitting into groove and completely hidden under lid. Anther behind pollen masses (I think). Under point of pollen masses a dark spot. This spot is very sticky & when touched pollen masses come away in one piece + separate into two strips on each side VV Miss Galbraith says this sticky point sticks to insect with point ~~forwards~~ but it turns into position where pollen masses are forward ready to pollinate next flower - that is wide part of V to front of insect.
Ovary :- 1.5 cm.
Buds :- 2 cm long ovary.
It takes labellum about ½ day to get from

position pointing to ground - position when bud opens - to its position pointing upwards + back. After pollination the lateral lobes of labellum come together to completely hide or cover the interior of the flower and the tip of labellum moves forward once more until it is nearly circular but pointing downwards.

1968 Jan 22nd Three flowers have opened on plant in garden. We have seen wasp on two of the flowers. Put plastic over plant to protect it from weather for photographic purposes + within 5 mins of removing plastic wasp was there. Plant has developed more leaves during year. Gave it teaspoon of yeast mixture.

Jan 28th Put plastic bag over plant yesterday but did not pull it right down to ground. This morning the insect was under the bag. Therefore the insect must be definitely attracted by the scent as if it was the sun on the glands it would not have entered the bag but rather on the outside of the bag. Upon removing the bag + insects arrived within one minute. Day very humid with slight breeze. Insects are also down in the orchid resting on leaves of pear tree. Insect compares with illustration in June Naturalist 1933 P. 41. Has red legs black abdomen with 2 rows of white spots towards the outside 3 spots :. where wings are attached. Very long red antennae, front legs not very long + dark but very long back legs + middle legs very red with hairs. Wings almost transparent. Size of insect variable

Cryptostylis leptochila (cont)

Observed one insect with pollinea on the end of the abdomen. End of abdomen tapering to a round end.

March 29th. Max observed an ichneumon fly on the orchid this morning before school about 7.15 am. This is the last flower on the stalk. Dad has observed them at about 9 o'clock over the last fortnight ~~beg~~ but not daily. This morning was very still and humid.

1969 July 26th Today we found just one plant with 5 seed pods and the very top flower was in full bloom. The flower was pale in color but otherwise perfect. We were not sure that the seed pods will mature.

1994 May 1 A great number of leaves spread over a large area on Austen's property near Darlamurla. There was also one plant with fertile seed boxes but still green.

2001 Dec 1 leaves in Sandy Ck Bush Newborough & in Bob Johnson's Bush nearby.

2003 Nov 1. leaves quite mature in Edward Hunter Reserve.

Observations on Pollination of Tongue Orchids

One morning early we noticed the ichneumon-fly on the small tongue orchid flowering in our garden. It is a very colorful insect with black abdomen with white spots down each side and a dark maroon tail, the wings are very transparent, the reddish antennae are longer than the insect and very active. The head and thorax are dark but the legs are an orange-red color giving the insect a bright color underneath. We have seen the insect resting on the leaves of the pear trees. As Ollie wished to photograph the orchid and the fly, we put a plastic bag over the orchid the night before and did not remove it until ready to photograph about 9.30 am. Within a few minutes of removing the bag there were two insects around the flower. These were photographed.

We then obtained permission to remove a plant of the large tongue orchid from a private property nearby and brought it home. We were interested to see if the same insect would visit both of these orchids. We put plastic bags on both orchids and did not remove them until 10.30 am., but only one fly visited each of the two flowers but was very wary. We repeated the experiment again the next morning but removed the bags at 9.15 am. This time we were rewarded as within 3 minutes of removing the bags we had 8 flies on the karge tohgue orchid flower and others on the small tongue orchid flower. They were all over the tongue and most of them waited to insert their tails into the centre of the flower. While in this position the antennae were extremely active and the insect stiffened into an arch. The flies varied in body length from 1/3" to 3/4" long, but we could not observe any other difference in them. Within 15 minutes all the flies had gone and we did not notice them there again that day. However we have noticed one or two visiting the flowers in the early morning. Does the insect only become active in the early part of the day and rest during the heat or

does the flower only emit the attracting scent in the earlier part of the day. Not one of us has observed a fly on the flowers later than about 10.15 unless the plastic bags have been used. Yet the flowers are in the sun until after midday and are not in the sun in the early morning when we have often seen them visited. Each time the plastic bags were used the insects came upwind and the weather on both days was very similar.

Cryptostylis Subulata. (Large Tongue)

1967 Jan 14th. Flowering in great numbers in swamp area opp Waterlily pond Yallourn Nth and also on grassy boggy slope .8 mls from Early Rd along Anderson's Track. on east side.

Scape:- Anything up to 3 ft.

Leaves:- app. 9 cm, lancelate, dark green.

Dorsal Sepal:- 2.5 cm reddish green, rolled into thin pointed form. Pointing back to stem, horizontal.

Lateral Petals:- 1.5 cm same formation only thinner & pointed upwards, light color yellowish green.

Lateral Sepals:- 2.3 cm same formation, reddish green horizontal, not quite so pointed.

Labellum:- 3 cm long - app. 1.5 cm wide. Shape:- rounded at top, straight sides tapering suddenly at tip, round shoulders. Curved backwards until touching about 2/3 way down at the back. Shoulders reddish green, rest maroon with 2 deep grooves very dark maroon down centre of tongue ending in 2 large ridged cali app. .5 cm from tip. 4 extra short grooves, 2 each side of long ones, at top near column. Labellum starts about 45° from horizontal facing downwards & finally is perpendicular facing the stem.

Column:- Two protrusions at top, circular like 2 seed cases. Under that a tiny triangular lid which fits in middle of pollen masses. Pollen masses are Y shaped with very sticky point under rail of Y. Quite a deep cavity under column formed by tongue. Cavity .5 cm long behind column and further up tongue. (Further observations on column over page.) After pollination or on maturing the shoulders of labellum curl forwards and cover centre of flower and rest of tongue gradually moves forward until it is rolled forward.

Edges are wavy during this process as they are straight when stretched back. We found pollen masses on the stems, on flower bracts and even on grass stalks. The insect must be able to get rid of the pollen masses much easier than they came off our twig.

Bud :- 2 cm long tapering & pointed with bulb near stem.

Ovary :- 1.5 cm long.

Leaf Bracts :- 2 very stem clasping about 1 cm long.

Flower " :- .8 cm long at each flower embracing ovary. Yellow green, striped red.

There is a certain amount of ~~[illegible]~~ variation in color from deep maroon tongues & darker stalks on plants found in shrubby area to yellowish green & lighter maroon on plants found in grassy area. Despite their size & the fact that there can be many flowers on a stalk they are not easy to see. Stems are reddish green. Although these flowers look fragile they are very rigid & stiff to touch. Found in swamp opp. Waterlily pond & then in large numbers .8 miles from Early Road to pond on Anderson's Track, on the right hand side going to pond from here.

Column :- 4 mm wide oval shaped, slightly winged & curved around pollen masses. 2mm deep, full width of labellum before shoulders.

As tongue of open flowers is bigger than any buds seen, we wondered if the tongue continues to grow after the bud opens.

1967 Jan 15th Bulb of L. tongue orchid transplanted to Tarralgon South Reserve as land to be subdivided on Anderson's Track.

Over log from track at east end of reserve & south end of track; 8 yards past big box tree past goodenias into bush. Dead teatree marks spot. Comb fern also planted here.

[illegible]

Cryptostylis Subulata (cont) P2

67 March 4th Found flowering in first gully in swampy area on Whitelaws Track off Callignee South Rd.

March 23rd Permission granted to transplant some plants into Traralgon South reserve.

July 2nd Transplanted plants into Traralgon South Reserve. Found one plant with flower open & a bud also. Found two plants with new seed pods formed. Old seed pods lower on stalk already scattered seeds, then gap where flowers did not set & then two green pods on each plant. Could this plant have longer flowering period or is it just the very dry Autumn this year.

1968 Jan 28th Flowering in swamp (dried out) Whitelaws Track. Apparently flowering for some time as some stalks had finished.

Brought one plant home in flower.

Jan 29th Put plastic bags over both plants night before. Removed bags about 10.30, only one insect visited plant.

Jan 30th Repeated experiment but removed bags at about 9.15 - 9.30 and within 3 minutes had 8 insects on flower at one time. Size of insects varied some ⅓" some ¾" & some in between. Within ¼ hr. all insects had disappeared & did not return to our knowledge.

if so, only singly.

Jan 31st Saw insect on ~~bo~~ orchid at 6.15 am.

1969 Jan 26th Flowering in our bush

Feb 16th " beautifully on Whitelaws Rd.
All shades from almost greenish yellow to
dark maroon between road & fence line.

1970 Jan 18th Flowering at Anderson's Track.

Feb 14th " in our Bush, some with buds.

1971 ~~Aug~~ Dec 12th Growing in HPM Block at Stradbroke.

Cienopteris heterophylla - Gipsy Fern.

1967 Apr. 30th On tree trunks at Morwell Nat. Park.
In reverse opp. Terra Valley N.P.

Cullen microcephalum

(Psoralea adscendens) Mountain Psoralea. 1

1996 Jan 20th Flowering at turntable on Victoria Falls near Omeo.

Cyathea australis – Rough Treefern

1967	Apr 30	Morwell Nat. Park.
1968	Feb 4	Yerang Park.
	Apr 7th	Cook's Reserve
	Apr 14th	Home Bush
1970	March 14th	Warrarah Bay.
	Apr 18th	Glen Nayook.
	Aug 29th	Darlamurla
	Sept 26	Near Chessum Rd Longford.
	Oct 1	New reserve Rosedale near Creek.
	Nov 23	hilly. Pilly Gully.
1971	Sept 2nd	McKenzie Falls area + other areas Grampians
1972	Jan 30th	Headwaters of McAlister River.
	~~Feb~~ July 16th	Tarra Valley
	July 22	Fairy Dell.
1993	Jan 31	Errinundra.
1995	Apr 12th	Drouin Water Reserve.
	Jan 15th	Dargo weekend.
1996	Aug 31st	~~to~~ Jindivick Land-care area.
	Dec 9th	Early Road, Moe – Significant Roadside Vegetation.
1997	Apr 5th	APM Reserve – Grand Ridge Rd.
2000	Dec 3rd	Sweetwater Ck Reserve.
2001	Dec 1	Sandy Creek Bush, Newborough.
2004	Apr 3	Colley's Rd. Block.

Cyathea cunninghamii - Slender Treefern

1968	Apr. 7th	Cook's Reserve
	Mch 3rd	Tarra Valley Reserve
1972	July 16	" "

Cyathea leichhardtiana Prickly Treefern.

1972 July 29th Fairy Dell. This Treefern has a more lacy appearance than the more common species & I think this may be due to the smaller pinnules. The prickles are on the base of the fronds and all along the midrib of the fronds. Prickles are about ½" long very stiff & pungent. Ollie photographed them.

Cyathea X marcescens — Skirted Treefern.

1972 July 16th. Plant growing near Men's Toilet at Tarra Valley. Sori on this specimen definitely had an indusium. Sporangium is elongated ( ) and sori appears to be quite round & not one side flat on leaf. Finules definitely serrated and not smooth. Frond very wide and edges tend to turn upwards. View from end on —— :

1978 Jan. Doubt if species ? hybrid between C. australis x C. cunninghamii personal communications [C. Beauglehole & R. Parsons]

1989 Jan. 15th Found plants in Yerang Park. I had always thought the skirted effect was the fronds hanging down from the trunk but after examining the sori on these specimens I think the name may come from the skirted effect when the indusium breaks to expose the sporangium. The indusium forms a skirt right around the sori. There were plenty of fronds remaining on the trunks & they were quite thick; however there was only the rachis or main vein on fronds, there were no pinnules attached as in the other treeferns when they retain the dead fronds. Of course this may have only happened in the specimens we found & may not be general. Pinnules are much longer & finer - or narrower in width - than either soft or rough treefern. The mid-rib of frond is rough but this is sparse & the "pimples" are rounded & low. This could be an easy identification if it is always the same.

Cymbonotus ~~lawsonianus~~ preissianus (Bear's Ear)

1966 Flowering Cochrane's lane. Sept. ~~4~~ 15th
1967 Sept 17 Flowering in bush behind our place.
1968 Sept 22nd " " Shingle Ck reserve.
Nov. 10th " " Clarke's Rd
1969 Sept 28th " " Tyers.
1970 Aug 23rd " " Cormandale
Sept 19th " " bush opp O. Lades.
Oct 17th " " Briagalong
1989 Jan 14 " at Wulgulmerang.
1993 Jan 31 " in Errinundra N.P.
1994 Oct " " Dawson R'way Reserve
1995 Oct 2 " " Mr Heddrick
1999 Jan 23rd Recorded on Gelantipy weekend.

*.

Cynodon dactylon var dactylon Couch or Bermuda Grass

1996 Apr 29" Growing on lot 213a Rosedale.
Written up in grasses + sedges book.

2000 Apr 11" Growing in Heyfield Wetland.

2002 Apr 27" " " " "

Cynoglossum australe — Australian Hound's-tongue

1993 Jan 30 Flowering near roadside between Club Terrace and Combienbar. Flowers bluish, leaves elliptic, plant erect.

1993 Feb 26 Flowering along track to Shallow Inlet.

Cynoglossum suaveolens Sweet Hounds-tongue

1969 Feb. 1 Flowering at Tyers.
1970 Jan 25th " at the Cobberas.
1971 Oct 23rd " " Morwell National Park
1972 Jan 30th " in Bryce's Gorge.
1983 Nov 24 Recorded with D. Parsons. 7km. south of Sale/Seaspray Rd junction on Giffard/Longford Rd. X10.
1994 Oct Recorded in Dawson R'way Reserve.
2003 Mch. " " Eel Hole Ck/Cemetery Reserve Management Plan.

Cynosurus echinatus — Rough Dog's-tail

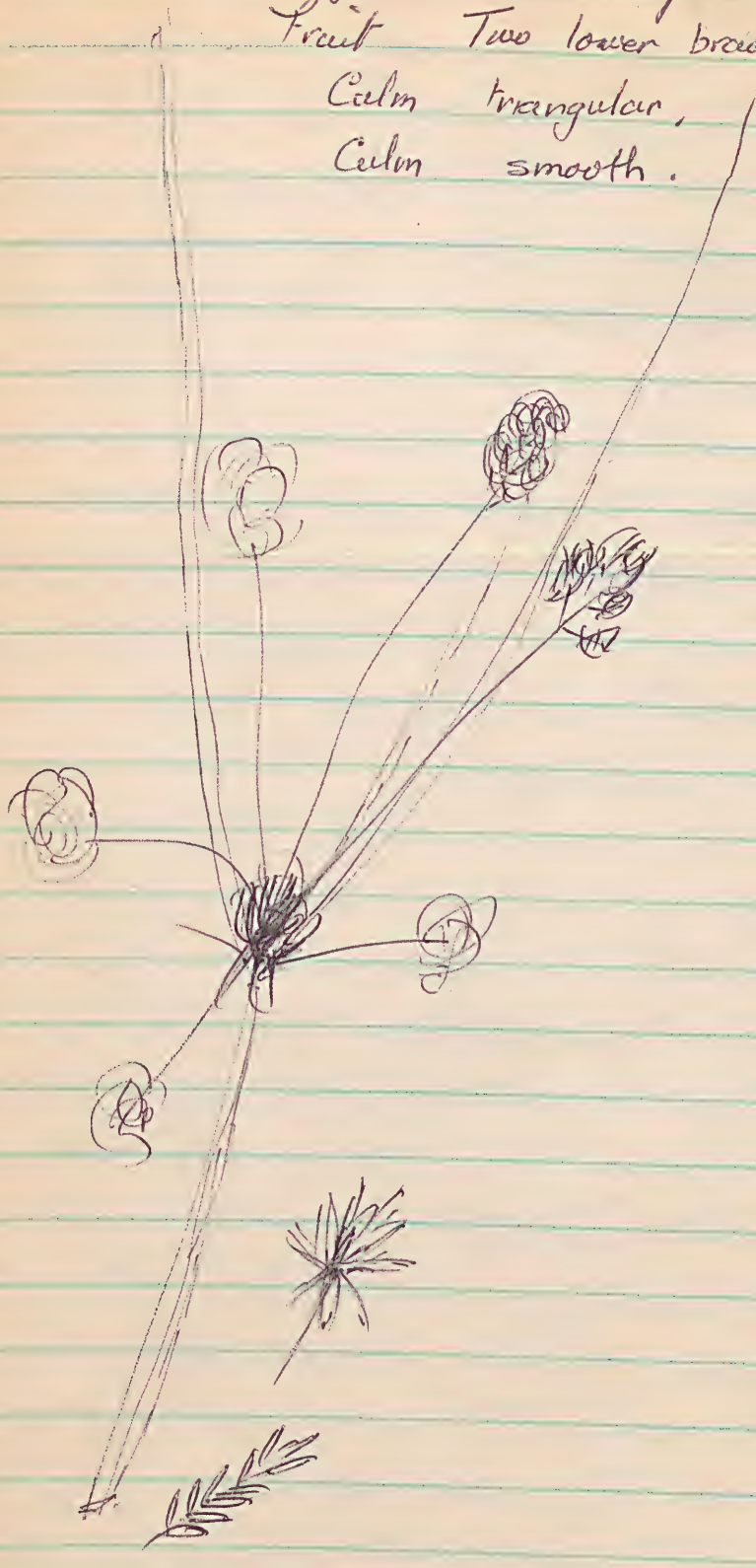
2002 Nov 14 Growing in Railway Reserve Reserve, Tgon

Cyperus eragrostis — Umbrella Sedge.

1995 Apr 12" Growing in Drain Water Reserve.
Dec 19' " " Railway Line Reserve Tigon
1996 Dec 9" " " Traralgon South Road from Callignee
Sth Road turnoff to Downies Lane.
1997 Apr 5" Growing in APM Reserve - Ground Ridge Road.
2000 Apr 11" " " Heyfield Wetland.
2001 Dec 1 " " Sandy Ck Bush Newborough.
2002 Nov 30" " " Toongabbie Wetlands.

Cyperus gunnii Flecked Flat-sedge.

1993 Mch 28 Plant in seed in wet area on flat along Tanjil River. Leaf tends to fold lengthwise. Fruit Two lower bracts long v one short one. Culm triangular, Plant densely tufted. Culm smooth.

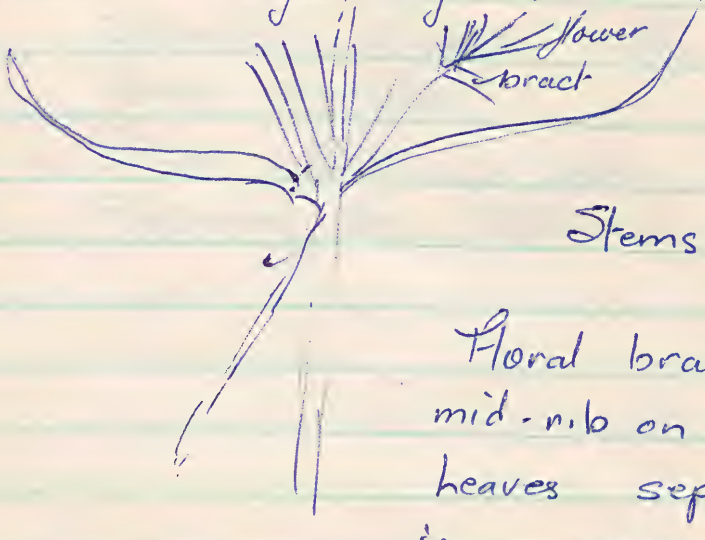


Cyperus gymnocaulis Spiny Flat-sedge

1995 April" Growing in Drouin Water Reserve

Cyperus lucidus Leafy Flat-sedge

1973 Oct 28th Plant growing in Channel Country of Avon River.



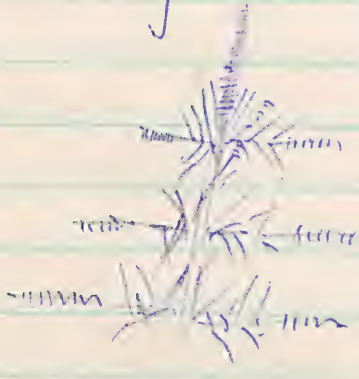
(exagerated umbrella.)

Stems 3-angled.

Floral bracts broad with prominent mid-rib on underside.
leaves septate nodulate-veins with joins across & with nodules.

Willis p. 220.

1987 Feb 12th Plants growing in Jeffries Block at Yinnar cor Driffield.
Flowers mostly conjested in head on end of long stems. lots of bracts along flower stalks



Flowers arranged stalk but all stems at right angles to stalk with lots of bracts toward stalk end of stem.

leaves deeply grooved on upper surface with wide rib on undersurface. Edge of leaves rough Midrib also rough but rest of leaf above & below apparently glaberous.
Some flowers on very short stems in congested centre at top of 3-angled stem as above.

1995 April 12th Growing in Drouin Water Reserve.
1997 Sept 6th " on Mac Rail Trail.
1999 Oct 16th " " Bonlac Wetland Darnum
2000 Apr 11 " " Heyfield "
2002 Nov 23rd " " Holey Plains State Park.

*Cyperus rotundus Nut-grass

1985 April 24th Collected at corner of Downey's lane.
Spreading flowers with bracts longer than
flower branches
Illust. Black p. 142.

1994 Oct Recorded in Dawson R'way Reserve.

* Cyperus tenellus Delicate leaf-rush.

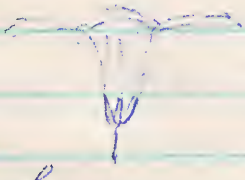
1970 Oct 21st Found at Cowarr near Thelymitre irregularis.

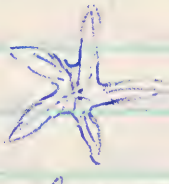
1995 Dec 19th Recorded on Railway Line Reserve Tgon
1996 Dec 7th " Old Melb. Rd, Morwell near Latrobe Road.
2001 Nov 3 " in Newborough Bush
Dec 5 " " Bob Johnson's Bush near Sandy Ck, Newborough.

Cyphanthera anthocercidea

Anthocercis frondosa — large-leaf Ray Flower.

1971 Sept 2nd Flowering at Flat Rock near Mt Zero.
Quite a big shrub about 5ft high.
Quite stiff shrub & erect. leaves
not hairy and a bit shiny - yellow green
Mid rib quite dark on under surface.
leaves alternate. Flowers stalked from
leaf bases - stalk about 4 mm long.
Flower tubular & then spreading about
1 cm long when in full bloom & about 2 cm
across spreading petals. Tube streaked
with dark purple lines. Stamens attached
to the tube - 5 - not as long as tube.





(petals should be
even around the centre)

1972 Aug 30th Flowering at Flat Rock.

Cyrtostylis reniformis

Acianthus ~~Reflexa~~ Reniformis

1966 Flowering August 21st.

1967 Aug 27th Flowering in APM reserve. Many with 3 flowers or buds on stalks. Lovely specimens.

Oct 1st Flowering in T'gon Sth Reserve

Scape: 11 cm red, 3 flowers.

Dorsal Sepal: 1.1 cm long × 2mm wide + curved inwards at edges. Maroon with pale edges - vertical.

Lateral Petals + Sepals: Very fine 1.1 cm long. Petals horizontal sepals hang straight down — maroon.

Labellum: 1.2 cm long 5mm wide. Oblong in shape slightly lighter in color - prominent mid vein. 2 calli with 2 parallel red stripes coming down labellum 3 mm.

Column: Bent at right angles 2.5 2.5 winged after bend.

Ovary: 5 mm grooved red.

Flower bract: 4 mm long at each flower.

Leaf: Circular 2 cm in diam. Scape rises from centre of leaf. (R) irridescent green on both sides, slightly lighter on underside.

1968 June 29th In Bud along Rosedale Rd.

July 9th leaves found in pine plantation.

Aug 1st Flowering in A.P.M reserve.

Sept 15th " along Lime Pit Road Rosedale.

Sept 25th Still flowering in A.P.M. Reserve.

1969 Aug 16th Flowering at Wilson's Prom.

1970 Aug 9th " in A.P.M. reserve.

23rd " at Gormandale.

23rd " at Holey Hill Trig Pt.

Sept 26th " in area near Chessum Road.

1971 Aug 15th " " APM Reserve.

Sept 1st " " the Grampians

Aug 22nd " in Lakes National Park.

1971 Oct 10th Still flowering in RAM reserve.
1972 Aug 29th Flowering in Grampians.
1996 Dec 7th Farley Road, Mbe. significant vegetation area.

Cyrtostylis robusta.

2006 July 31 Flowering at McLaughlans Beach – Ralph Tabay.

tasmanica

Cystopteris (felix-fragilis) Brittle Bladder-fern

1971 Jan 30 Growing on flats at Hewitt Springs.
Sori enclosed in a bladder.

Dactylis glomerata: Cocksfoot.

1992 Oct (?) Growing in our lane. Common grass. Inflorescence segments on long scabrous peduncle which divides into 2 - one shorter than other so that they fit together to make one only one-sided spike. Top leaf long than inflorescence but lax. Ligule rather tattered.

1994 Oct Recorded in Dawson R'way Reserve

Damasonium minus Star-fruit

1983 Nov. 28. Recorded with Dr. Parsons for Cooding Road corner on Seaspray / Gifford Road. X 19.

Dampiera lanceolata.

1973 Sept 3rd Flowering with beautiful dark purple flowers. Stems ribbed, leaves in groups, woolly underneath, revolute & slightly hairy.

Dampiera purpurea. Mountain Dampiera

1994 Nov 9th Recorded on Nicola weekend

Dampiera Stricta

1966 Oct 22 Flowering along Anderson's Track.
1967 Jan 14th Still flowering " " "
Oct 13th Flowering at Haberfoucha Beautiful bushes with lots of branches + flowers, beautiful sight. White variety also found.
Nov 25th Flowering along Anderson Track.
1968 Sept 28th " Dutson Downs
Oct 26th " Senini's Track.
Nov 3rd " Andersons Track
Dec 29th " road past Walhalla.
1969 Sept 27th " at Gellibrand.
1970 Jan 17th " along Senini's Track.
1969 Oct 12th " in Warragal area. Along Tyrong North Road were specimens that were pure white -
Nov 2nd " Flowering at Briagalong.
1970 Oct 17th " " " also the pure white variety was flowering here.
1971 Jan 17th Flowering on road to Mt Useful.
1994 May 1 Plants growing on Austen's property near Darlamurla.
1994 Nov 26 Flowering in ~~1111~~ block Stradbroke 5th. Cipp. Hway.
1995 Oct " " Mt Heddwich.
2006 Sept 30 " " ~~Spm~~ Senenis Track "
2006 Nov 4 " " Springsure area.

Dandelions

GENUS	LEAVES			SCAPE				ACHENES					HEADS		Bracts	Receptacles (Tip of floral stem)		Ray floret	Species
								PAPPUS BRISTLES			Beaks		HEI						
	Glabrous	Scabrid	Hairy	Leafless	Leafy	Simple	Branched	Simple	Plumose	Scales	Beaks	Beakless	Single	Multiple	Hairy	Naked	Scales		
HYPOCHOERIS	✓ deeply	✓ lobed		✓			✓		✓		✓	✓					✓		2
LEONTODON			✓ toothed	✓		✓		✓		✓	✓	✓	✓			✓			1
TARAXACUM	✓ lobes pointing down			✓		✓		✓			✓		✓			✓			2
CREPIS			✓ thinly lobed		✓		✓	✓			✓	✓		✓	✓	✓			4
PICRIS		✓ lobed			✓		✓		✓			✓		✓		✓			2

Species

Hypochoeris 5-toothed. Perennial ; leaves hispid ; involucre shorter than florets; scape enlarged below head; achenes longbeaked * H. Radicata.

Annual. ; " glabrous; " as long as " ; " not " " " " beakless * H glabra.

Taraxacum Leaves pointed 6 to 15 mm ; involucre bracts spreading or reflexed; beak > twice up to 5 times achenes; achenes strongly roughened. * T. officinale

leaf lobes rounded 4-5 mm ; " " appressed ; " about twice length " " very shortly roughened T. aristum (not recorded for T grid)

Picris' leaves broad-lanceolate almost spiny with coarse bristles; involucre with 3-5 leaflike bracts; achenes slender beak as long * P. echioides (Not T)

" narrow " to linear hispid no bristles ; " ≤ never " " " ; " very short " * P. hieracioides

Crepis higule 5-toothed. Achenes 1.5-2.5 mm not beaked ; involucre 5-8 mm, downy & glandular hairs; stem-leaves lanceolate, sessile, auriculate bases. * C. capillaris

" 3-5 mm beaked; " 8-10 mm stiff yellowish bristles * C. setosa

3-4 mm " " downy & ± glandular 8-13 mm without bristles; peduncles very long, bracteolate, heads nodding in bud. * C. foetida

4-5 mm " " " " " " " " " naked heads always erect.

Leontodon Nodding in bud. Ligule 5-toothed * C taraxacifolia

Datura stramonium Common Thornapple.

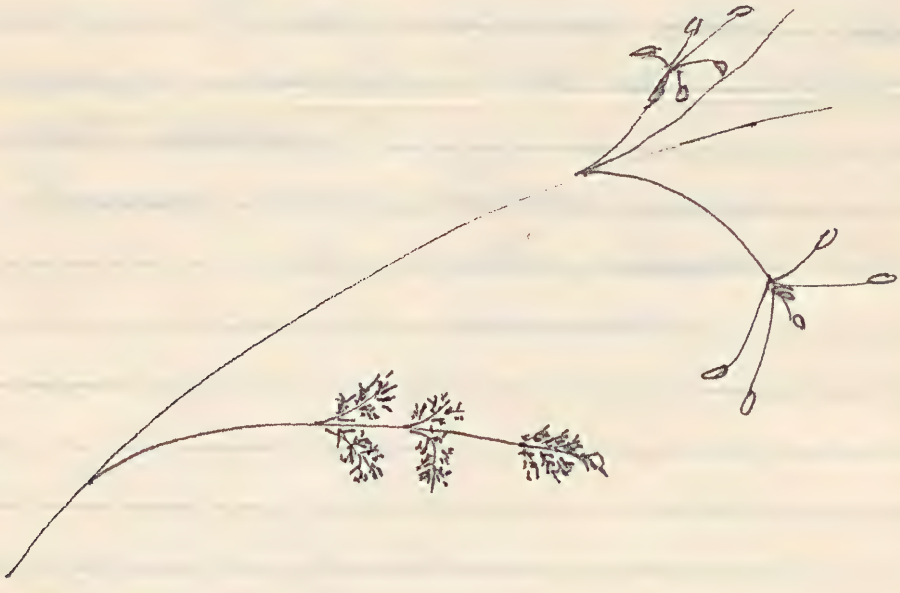
1990 February 18th Flowering and in seed at APM settling ponds along track to where water enters river.
Flowers cream about 8 cm long, calyx at least 2/3 length of bell which has 5 points to petals.
Fruit about 5 cm long with numerous spine, sharp even when green. Spines < 1 cm long but of differing lengths. Fruit are between branches in fork.
Leaves large app 10cm long with scooped areas between teeth . Upper surface very dark green, undersurface light green. Leaves go lax very quickly after picking. Fruit has a deep collar rolled back below junction with stem, collar about 1 cm deep.

Daucus carota Carrot.

1995 Apr 12th Growing Drouin Water Reserve.
Dec 12th " Railway Reserve near Traralgon.

Daucus glochidiatus Austral Carrot.

1988 Nov 3. Plant growing in Wirilda at seed stage. leaves bipinnatisect (carrot-like). Basal leaves with very long stems. Stems branching. Flowers in umbels, seeds on varying length pedicles, centre one almost sessile. Seed with rows of reddish prickles which are barbed at tip. Seed 3-4 mm long.



1994 Oct 30 ~~Haans~~ Growing in Dawson Water Reserve
1995 Apr 12th " " Darwin " "
1996 Oct 12th " " Paradise Beach near 2nd pipeline.

Daviesia brevifolia — Leafless Bitter-pea

1971 Sept 1 Flowering on road to Mt Zero and other places in Grampians.
Branches round, ~~included~~ inclined to curve with occasional short spines at curves. Flowers lovely rosy colour in groups at curves. Flowers on short stalks between spines v branch. Usually 3 flowers in each cluster.

1972 Aug 29th Flowering near Gol-gol Gorge.
28th " in Little Desert.
29th " " Grampians.

Daviesia Buxifolia — Heart-leaf Bitter Pea

1969 Oct 4th — Flowering along Nicola Rd. Leaves very round & plants with many flowers close together.
Plants at Burgoin's Cap very tall about 8ft high.

1970 Oct 17th — Flowering at Briagalong.
1994 Nov 9th — " on Nicola weekend.
1995 Oct 29th — " along Freestone Creek Road and Insolvent Track

Daviesia latifolia (Hop Bitter Pea.)

1966 8th Oct. Flowering opp. Chester Park.
13th Nov Seeds on plants. Very spectacular. Deep maroon in color, ⌣ shaped, Seed pods continue the pattern of the bracts. Approx. 2 seeds to each pod.

1967 23 Sept Flowering in Gormandale Reserve
Oct 13th " at Haberfouche
1968 - 20th " at Clarke's Road.
Nov 10th " " "
1969 Oct 12th " " Tynong North.
1970 Jan 24th " " Wulgulmerang.
Aug 23rd " at Gormandale.
Oct 1. " at new reserve Rosedale.
Oct 17th " " Briagalong.
1971 Oct 10th " " APM. reserve.
27th " " Reid's Corner.
Nov 12th " " Flynn
1994 Nov 26 " " APM block Stradbroke Sth. Gipp. Hway.
Oct 28 " " T'gon Sth Reserve.
Nov 9th " on Licola weekend
1995 - Oct " " Mt Heddrick.
1995 Dec 12th Plant recorded on Railway Reserve near Traralgon.
1999 Jan 23rd " " " Cielantipy weekend
2004 Aug 27th " " " Newbarough bush.
Dec 1 " " " " " Sandy Cks.
2004 Apr 3 " " " Colley's Rd. Block.

Daviesia laxiflora — Tall Bitter-pea

1994 Nov 9th — ~~Recorded~~ on hicila weekend. (Used to be D. mimosoides var laxiflora.)

1995 Oct 29th — Flowering along Insolvent Track near Boronia galbraithiae. This plant has smaller leaves & much broader than D. mimosoides, leaves about 1" long and 1/2" wide with reticulated veins. Margins of leaves are not really toothed but rather little curves ~~~~. Flower panicle(?) has long stem with many reddish bracts & then a cluster of 4–8 yellowish flowers. Flowers are so small as colour seems to be taken from bracts. Two stalks of flowers from the base of each leaf.

Daviesia leptophylla. (virgata) Narrow-leaf Bitterpea

1973 Sept 5th Flowering near Lake Eppalock - Bendigo.
Identified by member from B.F.N.C.

1994 Oct 30 Flowering in Dawson Water Reserve

" " " " Rway "

1995 " " " Mt Heddrick.

Mimosoides

Daviesia (Corymbosa) (Narrow-leafed)

1966 25 Sept Flowering at Cowwar

20th Nov. A wide-leafed variety of this plant was flowering along stony creek

1967 1st Sept Flowering along Glenmaggie Rd.

Nov 8th " at Cowwarr

Nov 5th " " Stony Creek is a wide leafed variety of this plant. Flowers on long racemes + leaves ~~2½-3~~ 11 cm long + ~~3~~ 1.8 cm wide. Very pretty plant.

Flowers all yellow with 2 brown spots on Keel, 3 racemes from each leaf base. Pods red flat Δ with thin bent point, green + soft. Leaves thin + shiny. This plant is above name var. arborea.

1968 Sept 28th Flowering near Dutson Dawn - very wide leaf variety.

1969 Aug 29th Narrow-leafed variety flowering on roadsides near Granite Rock

Oct 4th Flowering at Cowwarr

Nov 2nd Pods on plants at Cowwarr.

1970 Jan 2nd Flowering at Tamboritha Saddle - the wide-leaf variety.

Oct 11th Flowering at Heyfield

1971 Aug 29th Flowering in the Grampians.

Nov 13th " at Cowwarr.

1991 Jan 26th " at Tulloch Ard Road near Gelantipy.

1992 Jan 25th " on Angler's Rest Excursion.

1994 Nov 9th " " Licola weekend.

2005 Jan 24 Members brought back specimens from Erninundra weekend. There were both ~~var~~ subsp. aeris + subsp. mimosoides

Daviesia pectinata.

1972 Aug 28th Plant growing in little Desert

Daviesia ulicifolia — Gorse Bitter Pea

1969 Jan 1st — Found plant but no seed on flower. Plant identified by Miss Galbraith. Looked very like Acacia ulicifolia at first look.

1969 Aug 24th — Found plant again at Glengarry North with tiny buds on it. Bushes up to 6' high, branches very thick each ending in a point. Leaves very rigid also with fine point & recurved edges. Leaves alternate. Will be mass of flowers later.

Aug 16th — Flowering at Wilson's Prom.

" 29th — Flowering on roadside near Granite Rock.

Sept 4th — Plants covered with flowers at Wilson's Prom.

1970 Oct 17th — Flowering at Briagalong

1971 Jan 30th — Plants in seed at Mt Howitt Hike.

Sept 25th — Flowering at Toronga Falls.

1972 Aug 30th — Plants growing with few flowers open. Think these specimens may be var rusicifolia as leaves are almost circular with point ( ) stem clasping. Each branchlet ending in a pungent point. Leaves & stems very hairy. In Grampians. Also on trip home from Horsham.

1979 Sept 10th — Recorded with Dr. Parsons for X.

1994 May 1. — Plant growing on Austen's property near Darkmurla.

Nov 9th — Flowering on Nicola weekend

1995 Jan 15th — " " Dargo "

1996 Jan 20th — " " Hotham "

Nov 7th — " " Giffard Rifle Range.

1997 Jan 18th — " " Mt Baldhead, Livingstone Ck & Mt Nugong.

1999 " 23rd — Recorded on Cicantipy weekend.

2005 " 24 — Members brought back specimen from Errinundra weekend.

Dendrophthoe vitellina Long-flowered Mistletoe.

1955 Oct Flowering along track from Alan Head to Cemetry at Mallacoota. Photographed.

1957 Oct 5 Flowering in same place. This time with Golden Mistletoe growing on it. leaves alternate, ovate lanceolate, flowers in racemes, petals 5, united to above the middle, reddish.

Dennstaedtia davallioides Lacy Grand Fern

1972 July 29th Fairy Dell.

1993 Jan 31 Errinundra.

Deparia petersenii ssp. congrua Japanese lady Fern

(Was. Athyrium japonicum)

1987 Plant growing down on the creek. No sori at this time.

1989 June Ollie grew plant from portion of above plant. Sori on this plant now. Identification verified by Dr. R. Parson LaTrobe Uni

Derwentia derwentiana

(Veronica)(Derwentia)

1966 Dec 29th Flowering along Jeeralong Rd.
1967 Dec 10th " heavy.
1968 Oct. 4th " at Burgein's Gap.
1969 Dec 15th " - Jeeralong Rd.
1970 Jan 1st " " Nicola Rd "
24th " " Wulgulmerang.
1971 Jan 17th " along the road to Mt Useful.
Jan 30th " at Howitt Springs and on Mt Howitt hike. The plants here were mostly 1ft or so high while plants at Mt Useful were at least 2ft high. Is this due to lower altitude?
Aug 29th Plants growing in the Grampians.
1972 Jan 30th Flowering at Howitt Springs.
1978 Jan. Synonymous Parahebe derwentiana. Briggs & Ehrend, Taxon 17 742 (1968) [C. Beauglehole & R. Parsons]
1992 Jan 25th Lots of plants flowering between Angler's Rest and Buckety Plains.
1993 Jan 31st Flowering in Errinundra N.P.
1994 Nov 6th " on Nicola weekend
1995 Jan 15th " " Dargo "
1996 Jan 20th " " Hotham "
1997 " 18th " " Livingstone Ck & Mt. Nugong.
Apr 5th Growing in APM Reserve - Grand Ridge Rd.
1991 Jan 25th " on Coolantippy weekend.
1999 " 23rd " " " "

Derwentia

(Veronica) Nivea (Mountain Speedwell)

1967 Feb 6th Flowering at Erica

1968 Jan 18th " " Baw Baw. The most beautiful dark blue flowers this year. Last visit to Baw Baw they were just pale mauve

1969 Nov 23rd Plants just in flower, most plants just in bud. at Mt. Baw Baw.

1972 Feb. Plants growing at Mt. St. Gwinear.

1973 Jan 26th " Flowering at Mt Baw Baw

1994 Jan 16th " " Mt St. Gwinear & Mt. Erica

1995 Oct 29th " along Freestone Creek Road up near Insolvent Track junction but not as far up as junction.

Derwentia

(Veronica) Perfoliata Digger.

1969 Oct 4th Flowering along Licola Rd.
Up to 3ft high with blue-green leaves in pairs joined at bases. Flowers soft blue color.

Nov 2nd Flowering at Briagalong.

1970 Jan 2nd " " Tamboritha Saddle.

25th " " Wild Dog Creek, Wulgulmerang.

Oct 19th " " Briagalong.

1973 Mch 17th Just finished flowering at Lake Tali Khan.

1991 Oct 12th Recorded on Mt. Hedrick.

1978 Jan. Synonymous Parahebe perfoliata Briggs & Ehrend. Taxon 17: 342 (1968) [C. Beauglehole & R. Parsons]

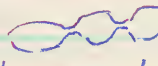
1991 Oct 12th Flowering at Mt. Hedrick.

1995 Jan 15th " on Dargo weekend.

1999 Jan 23rd " both Cielantipy weekend 1991 & 99.

gunnii

Desmodium (varians) Variable Tic-trefoil

1969 Feb 1. Flowering ~~in~~ seed. Pod  . Pods very sticky with hairs & each seed breaks away from the others and others. Mt Tyers.

1991 Jan 2 Plant growing along Pipeline Track Moondarra. In Willis var. gunnii is mentioned with round leaflets. No flowers at this time.

1994 Oct 30 Growing in Dawson Water Reserve.

1997 According Flora of Victoria Vol 3 Desmodium varians is a rare plant that is not recorded for our area, but what was D. varians var. gunnii is now D. gunnii and is recorded for our area.

Deyeuxia quadriseta Reed Bent-grass.

1973 Mch 11. Plant growing at Willung South.

1992 Aug. Growing in Casuarina Woodland, Railway Reserve Fulham. Conspicuous awn attached near base of lemma. Ligule 2-5mm long. Lemmas with 4 long teeth at apex. Panicle dense.

23/12/02

Dear Bon,

I just rang Geoff Carr about your Dianellas. As I expected, he doesn't like the treatment in Flora of Vic. He says he now knows of 25 taxa in Vic, not just the 10 in FV. ~~ten~~ strange that FV doesn't show it in Grid T!

He says that in FV, all 3 of yours would come out at D. longifolia var. longifolia. But when his work comes out, all 3 will be known as D. laevis. This is a fairly common species from Melbourne ~~to~~ around to Barrington Tops in NSW, always on the coastal side of the Great Divide. Not scarce in your part of Gippsland. Leaf sheath very pale. These days grown widely in Melbourne (ie. horticulturally)

He says he'd be happy to determine any future collections of Dianella. He needs details of the habit of the plant. E.g. is it a tussock? How wide is it? Also needs the colour of the anthers & perianth ~~and of the strim~~

If posted fresh (unpressed), best to post it directly to him: G.W. Carr
Ecology Australia, 88B Station St. Fairfield
Vic 3078

Thanks again Bon

All the best

Bob

(not posted till Jan 2).

Bon — am away now till Jan 20 — excuse the delay on your grass (Neville not in . . .)

Copy of letter to Geoff Case 16/1/03

Thank you for identifying the Alianellas I sent to the Fauna. I was surprised that the three specimens were all the same species. This was because when examining them we thought that the filaments of the flowers were different in specimen 224. They were much longer than those in specimens 225-226. Not only that but the filaments in 224 were twisted while those in 225 + 226 were short + straight. I imagine that since they were all the same species this is not a diagnostic feature. It also seemed the leaves were much lighter in colour. We could not find the leaf sheath so imagine it remained on the plant.

Could you tell us if these features are important? If so we could try to collect specimens of 224 again next year + also provide you with the habit of the plant as the Fauna suggested you would like. Would it be necessary to press some flowers separately so that they would not wither before they

Get to you?

Thanking you for your time.

Yours faithfully

Ben Thompson

No.	Conservation status	Taxon	Name in Walsh and Entwisle (1999) *Fl. Victoria* Vol. 4 supplement, based on Conran (1994) and Carr and Horsfall (1995)	Unpublished ms. name	Distribution							Distribution by Victorian Bioregion										FIS Number
					WA	Vic	Tas	SA	NSW	Qld	ACT	1	2	3	4	5	6	7	8	9	10	11	
17		*D. brevicaulis* (Ostenf.) G.W. Carr & P.F. Horsfall (Small-flower Flax-lily)	*D. brevicaulis* (Ostenf.) G.W. Carr & P.F. Horsfall	—	+	+	+	+	+			1.1 1.2 1.3	2.1 2.2	3.1		5.1 5.2 5.3			8.1	9.1	10.3 10.4		4412
18	Ke	*D.* sp. aff. *revoluta* R.Br. (Albury) (Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	—		+			+						4.1								7400
19	Kk	# *D.* sp. aff. *revoluta* R.Br. (Bass) (per T. Barlow) (Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	—		+										5.1							7401
20	Kr	*D.* sp. aff. *revoluta* R.Br. (Burrowa) (Showy Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	*D. decora* G.W. Carr *ined.*		+			?									7.1					7402
21		*D.* sp. aff. *revoluta* R.Br. (Coastal) (Coast Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	*D. maritima* G.W. Carr & P.F. Horsfall *ined.*		+	+	+					2.1 2.2	3.1		5.1 5.2 5.3				9.1	10.3 10.4		5557
22	Kk	*D.* sp. aff. *revoluta* R.Br. (Cobboras) (Snow-gum Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	*D. sticta* G.W. Carr *ined.*		+			?													11.1	7416
23	Vv	*D.* sp. aff. *revoluta* (Condah)	*D. revoluta* R.Br. var. *revoluta pro parte*	*D. oligophylla* G.W. Carr *ined.*		+								3.1									?
24	Ee	# *D.* sp. aff. *revoluta* R.Br. (Crib Point) (Slender Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	*D. exilis* G.W. Carr & P.F. Horsfall *ined.*		+										5.1							5552
25		# *D.* sp. aff. *revoluta* R.Br. (East Gippsland) (Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	—		+	?		+							5.1			8.1				7417
26	Kr	*D.* sp. aff. *revoluta* R.Br. (Genoa) (Eastern Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	*D. microstruma* G.W. Carr & P.F. Horsfall *ined.*		+	?		+										8.1				5562
27	Vv	*D.* sp. aff. *admixta* Gand. (Lawloit Range) (Wimmera Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	—		+		+				1.1 1.3											7455
28		*D.* sp. aff. *revoluta* R.Br. (Mallee) (Mallee Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	*D. concolor* G.W. Carr & P.F. Horsfall *ined.*		+		+	+			1.1 1.2 1.3											5553
29	Ee	# *D.* sp. aff. *revoluta* R. Br. (Minjah) (Basalt Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	*D. minjah* G.W. Carr *ined.*		+								3.1									7463
30		*D.* sp. aff. *revoluta* R.Br. (Montane) (Mountain Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	*D. oreophila* G.W. Carr & P.F. Horsfall *ined.*		+			+		+										10.1 10.2	11.1	5556
31		*D.* sp. aff. *revoluta* R.Br. (North-west Victoria) (Stiff Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	*D. perstricta* G.W. Carr & P.F. Horsfall *ined.*		+		+	+			1.1 1.2 1.3					6.1						5554
	Kk	*D.* sp. aff. *revoluta* R.Br. (Snowy River) (per S. Mathews) (Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	—		+			?										8.2				7460
32		**(d) *Dianella tasmanica* Hook. f. group**																					
33		*D. tasmanica* Hook. f. (Tasman Flax-lily)	*D. tasmanica* Hook. f.	—		+	+		+		+			3.1		5.1 5.2 5.3	6.2 6.3		8.1 8.2	9.1	10.1 10.2 10.3 10.4 10.5	11.1	1030
34		*D.* sp. aff. *tasmanica* Hook. f. (Snowfields) (Snow Flax-lily)	*D. tasmanica* Hook.f.	*D. chlorocarpa* G.W. Carr & P.F. Horsfall *ined.*		+			+		+											11.1	5551
35	Kr	*D.* sp. aff. *tasmanica* Hook. f. (Snowy River) (Rock Flax-lily)	*D. tasmanica* Hook.f.	*D. cremnophila* G.W. Carr & P.F. Horsfall *ined.*		+			+										8.2				5550

Bioregions (Source: NRE Corporate Geospatial Data Library, August 2002)

1.1 Lowan Mallee
1.2 Murray Mallee
1.3 Wimmera
2.1 Glenelg Plain
2.2 Bridgewater
3.1 Victorian Volcanic Plain
4.1 Victorian Riverina
4.2 Murray Scroll Belt
4.3 Robinvale Plain
4.4 Murray Fans
5.1 Gippsland Plain
5.2 Otway Plain
5.3 Warrnambool Plain
6.1 Goldfields
6.2 Central Victorian Uplands
6.3 Greater Grampians
6.4 Dundas Tablelands
7.1 Northern Inland Slopes
8.1 East Gippsland Lowlands
8.2 East Gippsland Uplands
9.1 Wilsons Promontory
10.1 Highlands – Southern Fall
10.2 Highlands – Northern Fall
10.3 Otway Ranges
10.4 Strzelecki Ranges
10.5 Monaro Tablelands
11.1 Victorian Alps

References

Carr, G.W. & Horsfall, P.H. 1995. 'Studies in Phormiaceae (Liliaceae) 1: New species and combinations in *Dianella* Lam. ex Juss.', *Muelleria,* vol. 8 (3), pp. 365-378.

Conran, J.G. 1994. *'Dianella'*, in *Flora of Victoria*, vol. 2, eds. N.G. Walsh and T.J. Entwisle, Inkata Press, Melbourne, pp. 647-51.

Ross, J.H. and Walsh, N.G. 2003. *A Census of the Vascular Plants of Victoria*. Edn. 7 Royal Botanic Gardens: Melbourne.

Walsh, N.G. and Entwisle, T.J. eds. 1999. *Flora of Victoria,* vol. 4, Inkata Press, Melbourne.

Checklist of Victorian *Dianella* (Hemerocallidaceae)

G.W. Carr, Ecology Australia Pty Ltd, 88B Station Street, Fairfield, Victoria, 3078 email: gcarr@ecologyaustralia.com.au Version 4: May 2004

Ø Indicates that the status of the taxon in Victoria is uncertain (see Ross and Walsh 2003).
♦ Indicates that the taxon is incipiently naturalised in Victoria (see Ross and Walsh 2003).
# indicates a taxon that is endemic in Victoria; some taxa not so marked may also be endemic.
The Flora Information System (FIS) numbers as given here mostly apply in the strict sense to the taxon.
Note: Names not in Ross & Walsh (2003) are given provisional numbers only.

No.	Conservation status	Taxon	Name in Walsh and Entwisle (1999) *Fl. Victoria* Vol. 4 supplement, based on Conran (1994) and Carr and Horsfall (1995)	Unpublished ms. name	Distribution							Distribution by Victorian Bioregion											FIS Number
					WA	Vic	Tas	SA	NSW	Qld	ACT	1	2	3	4	5	6	7	8	9	10	11	
		(a) *Dianella caerulea* Sims group																					
1	Kv	*D.* aff. *caerulea* Sims *sens. lat.*	*D. caerulea* Sims var. *caerulea*	—		+			+	?									8.1				5561
2		*D.* sp. aff. *caerulea* Sims (Eastern Victoria) (Paroo Lily)	*D. caerulea* Sims var. *caerulea*	—		+	?		+	+						5.1			8.1 8.2		10.1		7392
3	Kk	# *D.* sp. aff. *caerulea* Sims (Powelltown)	*D. caerulea* Sims var. *caerulea*	—		+															10.2		—
4	Vr	*D. callicarpa* G.W. Carr & P.F. Horsfall (Swamp Flax-lily)	*D. callicarpa* G.W. Carr & P.F. Horsfall	—		+		+					2.1	3.1		5.2 5.3	6.3						5086
5		♦*D.* aff. *callicarpa* G.W. Carr & P.F. Horsfall (Bundoora)	—	—		+								3.1									5968
		D. laevis R.Br. var. *aspera* Benth. (Rough Flax-lily)	*D. caerulea* Sims var. *caerulea*	*D. aspera* (Benth.) G.W. Carr & P.F. Horsfall *ined.*		+	?		+							5.1	? 6.3		8.1 8.2		10.1 ? 10.3		5558
6		**(b) *Dianella longifolia* R.Br. group**																					
7	Ee	*D. amoena* G.W. Carr & P.F. Horsfall (Matted Flax-lily)	—	—		+	+							3.1		5.1	6.1				10.2		5084
8		*D. laevis* R.Br. (Smooth Flax-lily)	*D. longifolia* R.Br. var. *longifolia*	—		+	?		+	?						5.1	6.1 6.2		8.1 8.2		10.1 10.4		5559
9	Rv	*D.* sp. aff. *laevis* R. Br. (Mallacoota) (Flax-lily)	*D. longifolia* R.Br. var. *longifolia*	*D. argillicola* G.W. Carr *ined.*		+			+										8.2				7393
10	Kv	*D.* sp. aff. *longifolia* R.Br. (Benambra) (Arching Flax-lily)	*D. longifolia* R.Br. var. *grandis* R.J.F. Hend.	*D. perfragrans* G.W. Carr & P.F. Horsfall *ined.*		+	?	?	+	?	+	1.3		3.1	4.1	5.2 5.3	6.1 6.2 6.3 6.4	7.1	8.2		10.2		5560
11	?Ve	*D.* sp. aff. *longifolia* R. Br. (Bonang) (Flax-lily)	*D. longifolia* R.Br. var. *longifolia*	—		+			?												10.5		—
12	Kk	Ø *D.* sp. aff. *longifolia* R.Br. (Montrose) (Flax-lily)	—	*D. hortorum* G.W. Carr & P.F. Horsfall *ined.*		+															10.1		7396
13	Kv	*D.* sp. aff. *longifolia* R.Br. (Riverina) (Pale Flax-lily)	*D. longifolia* R.Br. var. *grandis* R.J.F. Hend.	—		+		?	+	?		1.2 1.3			4.1								7399
14	K	*D. porracea* (R.J.F. Hend.) P.F. Horsfall & G.W. Carr (Riverine Flax-lily)	*D. porracea* (R.J.F. Hend.) P.F. Horsfall & G.W. Carr	—		+		+	+	+					4.1 4.2 4.3			7.1					4266
	Vv	*D. tarda* P.F. Horsfall & G.W. Carr (Late-flower Flax-lily)	*D. tarda* P.F. Horsfall & G.W. Carr	—		+			+						4.1		6.1 6.2						5085
15		**(c) *Dianella revoluta* R.Br. group**																					
16		*D. admixta* Gand. (Black-anther Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	—		+	?	+	+	?	+	1.1 1.2 1.3	2.1 2.2	3.1	4.1	5.2 5.3	6.1 6.2 6.3	7.1			10.1 10.2		5555

ECOLOGY AUSTRALIA
(Copy of letter from Geoff Carr)

5th October 2004

Bon Thompson
P.O.Box 644
Traralgon 3844

Dear Bon

I enclose a copy of the latest *Dianella* checklist; as you can see there are quite a few species in Victoria. Quite a few hybrids have also shown up and they are easy to distinguish because all seem to be sterile - with sterile pollen that does not shed from the anthers (anthers don't dehisce) and the ovules in the ovary are dead.

Unfortunately I have not published any new species but have several manuscripts in preparation. I'd be more than happy to determine any material for you if you care to send it - fresh in a plastic bag.

Please feel free to ring me at any time on the number below.

Regards

Geoff

Geoff Carr

Flora and Fauna Consultants
88 B Station Street, Fairfield 3078 Tel: (03) 9489 4191 Fax: (03) 9481 7679 Email: admin@ecologyaustralia.con.au
A.B.N. 83 006 757 142

Manella amoena

Site 2. East of Taralgon Racecourse
Site 4 West of Sheepwash Creek.
Site 5 Sheepwash Creek to Bass Lane
Site 6. West of Flynns Creek Road West.
Site 8 West of Wrights Lane
Site 9. Wrights Lane to Middle Creek
Site 10 West of Flynns Creek Road West

In Andrew Paget's report.

/ Seen at Hazelwood Power but not in bad yet.
30/11/02.

TABLE 1. RESOURCE REQUIREMENTS
baw baw frog action statement

For HELP with using this spreadsheet, choose "formula - note" and click on the relevant note

	YEAR									
	1	2	3	4	5	6	7	8	9	10
DESIRABLE ACTIONS										
Action 1..... Investigate remote sensing techniques										
Sci/tech time (days)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Wages (days)										
Vehicles (kms)										
Materials & equipment $										
Other eg. overtime $										
Action 2..... Investigate alternative monitoring techniques										
Sci/tech time (days)	1	1	1	1	1	1	1	1	1	1
Wages (days)										
Vehicles (kms)										
Materials & equipment $										
Other eg. overtime $										
Action 3..... Encourage ecological research										
Sci/tech time (days)	1	1	1	1	1	1	1	1	1	1
Wages (days)										
Vehicles (kms)										
Materials & equipment $										
Other eg. overtime $										
Action 4..... Monitor and act on other threats										
Sci/tech time (days)	1	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1
Wages (days)	1	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1
Vehicles (kms)	100	100	100	100	100	100	100	100	100	100
Materials & equipment $										
Other eg. overtime $										
Action 5..... Investigate establishing a Friends group										
Sci/tech time (days)	1	1	1	1	1	1	1	1	1	1
Wages (days)	5	5	5	5	5	5	5	5	5	5
Vehicles (kms)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Materials & equipment $	500	500	500	500	500	500	500	500	500	500
Other eg. overtime $	500	500	500	500	500	500	500	500	500	500
Action 6..... Provide traing and extension for field and operations staff										
Sci/tech time (days)	2	2	2	2	2	2	2	2	2	2
Wages (days)	2	2	2	2	2	2	2	2	2	2
Vehicles (kms)	500	500	500	500	500	500	500	500	500	500
Materials & equipment $	200	200	200	200	200	200	200	200	200	200
Other eg. overtime $										
Action 7..... Assist with management of the automatic weather monitoring station on the plateau										
Sci/tech time (days)	1	1	1	1	1	1	1	1	1	1
Wages (days)										
Vehicles (kms)	200	200	200	200	200	200	200	200	200	200
Materials & equipment $										
Other eg. overtime $										
Action 8..... (name)										
Sci/tech time (days)										

Wages (days)
Vehicles (kms)
Materials & equipment $
Other eg. overtime $

Action 9..... (name)
Sci/tech time (days)
Wages (days)
Vehicles (kms)
Materials & equipment $
Other eg. overtime $

Action 10..... (name)
Sci/tech time (days)
Wages (days)
Vehicles (kms)
Materials & equipment $
Other eg. overtime $

Action 11..... (name)
Sci/tech time (days)
Wages (days)
Vehicles (kms)
Materials & equipment $
Other eg. overtime $

Action 12..... (name)
Sci/tech time (days)
Wages (days)
Vehicles (kms)
Materials & equipment $
Other eg. overtime $

Action 13..... (name)
Sci/tech time (days)
Wages (days)
Vehicles (kms)
Materials & equipment $
Other eg. overtime $

Action 14..... (name)
Sci/tech time (days)
Wages (days)
Vehicles (kms)
Materials & equipment $
Other eg. overtime $

Action 15..... (name)
Sci/tech time (days)
Wages (days)
Vehicles (kms)
Materials & equipment $
Other eg. overtime $

Action 16..... (name)
Sci/tech time (days)
Wages (days)
Vehicles (kms)

DEPARTMENT OF CONSERVATION & NATURAL RESOURCES

Your Ref:
Our Ref:
Date: 1 February 1994

Peter Collins
Environment Protection Authority,
Traralgon Office

Dear Peter,

I ~~would like~~ wish to request that copies of all the water quality monitoring results for testing that has occurred in the past in the stream(s) adjacent to the sewage treatment pond(s) at the Mount Baw Baw Alpine Resort be forwarded to me. In addition to this request, I would be most appreciative if you could arrange for the results of all future testing to be automatically forwarded to this office.

Yours sincerely,

B K Ward
Coordinator
Flora, Fauna and Fisheries
Central Gippsland

I am writing w.r.to the water quality of creeks within the MBBAR into wh. treated effluent from the MBBA Village is discharged under an EPA lic. given to the ARC. ~~the ARCs licence to discharge tr. effluent at the Mt BBA Resort~~.

I request detailed copies of all water qual monit. that has occurred in stream(s) ad. to ..... b-.

GIPPSLAND AREA, 71 HOTHAM STREET, TRARALGON, VICTORIA, 3844 TELEPHONE (051) 722111 FACSIMILE (051) 722100

Dianella amoena

Site 2. East of Traralgon Racecourse
Site 4 West of Sheepwash Creek.
Site 5 Sheepwash Creek to Barrs Lane
Site 6. West of Flynns Creek Road West.
Site 8 West of Wright's Lane
Site 9. Wright's Lane to Middle Creek
Site 10 West of Flynns Creek Road West

In Andrew Paget's report.

Seen at Hazelwood Power but not in bad ye
30/11/02.

Ecology Australia

14 May 2003

Bon Thompson
PO Box 644
Traralgon Vic 3844

Dear Bon

Thank you for the *Dianella* collections you sent via Bob Parsons. My response was probably unsatisfactory and probably incorrect. I need to see more material, including flowering plants. As you can see from the enclosed checklist there are many more *Dianella* species than the *Flora of Victoria* allows. I would be very happy to see any *Dianella* in the field (in October, November or December). Please feel free to ring me any time. I'm very happy to converse about Dianellas – its easier than letters or email.

Sorry for the brevity of this letter.

Regards

Geoff Carr

Flora and Fauna Consultants
88 B Station Street, Fairfield 3078 Tel: (03) 9489 4191 Fax: (03) 9481 7679 Email: admin@ecologyaustralia.com.au
A.B.N. 83 006 757 142

AFFLECKS RD
TOONGABBIE

On railway reserve where it intersects with Afflecks Rd.

T7.

Leaves yellow-green & smooth throughout right to tip.
Could not see leaf-sheath
Filament of stamen long & twisted.

224

Plant over 1 m tall.

146° 38'
38° 03'

Sent to Bob Parsons 13/12/02

SINCLAIR RD

FERNBANK

W 47

200 yds ~~East~~ West from Fernbank.

In association with
Drosera

Long 147° 19' 30"
Lat. 37° 52'

226

Plant about 1m tall perhaps
Up towards apex of leaves the
margins & the midrib were scabrous
& the leaf-sheath was easily seen
as separate from leaves.
Filament of stamens short & straight
leaves dark green.
Sent to R.b Parsons 13/12/02

DAHLSENS RD
BINGWARDEN EAST

200 m west from junction of
Dahlsen & Benwarden Roads

VW 49
leaves not attached to roots
in specimen
In association with
D. revoluta

Revoluta now in seed
while these are just flowering

Long. 147°33'30"
Lat 37°53'30"
225

Leaves & stamens as per 226
I think.

Sent to Bob Parson 15/12/02

for Thompson

Ecology Australia

Identification of Dianella (Flax-lily) species in the Latrobe Valley

Project: 08-03

Prepared for:

Department of Sustainability & Environment

Ecology Australia Pty Ltd

Flora and Fauna Consultants1

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Author	Geoff Carr
Location	J:\CURRENT PROJECTS\LaTrobe Valley Dianella 08-03\La Trobe Valley Dianella species.doc
Distribution	

Document History

Status	Changes	By	Date
Draft 0.1	First Draft	Geoff Carr	28/3/08

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Error! No table of figures entries found.**Plates**

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Appendix 2 Collection and curation of material of *Dianella* Lam. ex Juss. and *Rhuacophila* Blume (Hemerocallidaceae) for herbarium and living collections 12

Summary

The *Dianella* (Flax-lilies) flora of the Latrobe Valley is outlined and discussed. A sterile flora key to the five taxa is given and salient features of the taxa are outlined. Two of the taxa are undescribed and several are rare or threatened, notably the *Environment Protection and Biodiversity Conservation Act 1999* listed *D. amoena* (Matted Flax-lily) important populations of which occur in the Latrobe Valley.

1 Introduction

The genus *Dianella* (Hemerocallidaceae) (Flax-lilies) as currently understood has 38 taxa in Victoria (Carr 2007 – Appendix 1) most of which are undescribed and most of which will be recognised at the specific level (rather than subspecies or varieties). Because there are so many undescribed taxa, and also numerous hybrids recorded (Carr unpubl. data) the literature is very inadequate, making identification difficult or impossible without specialist knowledge. The *Flora of Victoria* (Conran 1994, Walsh and Entwisle 1999) deals with only 10 species.

The genus is also of considerable conservation concern because many species are rare or threatened in Victoria or nationally, as indicated in Appendix 1. *Dianella amoena* is listed as endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Five *Dianella* species have been recorded in the Latrobe Valley which is in the Gippsland Plains bioregion. In order to facilitate identification of these species I outline here the distinguishing features of the species and present a key. This will enable flora managers and others locally to identify the *Dianella* species they encounter in the field. Also appended (Appendix 2) to this report is a recently published article (Carr 2008) which describes the collection of *Dianella* material for taxonomic and identification purposes and the kinds of data that need to be collected to aid in their identification.

2 Key to sterile (non-flowering) *Dianella* in the Latrobe Valley, Victoria

This key will enable the identification of sterile (non-flowering or fruiting) as well as fertile material *Dianella* encountered in the field. All taxa are easily distinguished vegetatively. The key is designed for use with fresh material, not herbarium specimens.

1 Leaves fully occluded with distinct leaf sheaths and blades 2

1 Leaves not occluded or not more than 1/3 occluded..... 4

2 Leaf tissue sunken or deeply grooved between veins on underside of blades (i.e. appearing strongly corrugated in cross section); plants rhizomatous to c. 2 m wide; leaves to c. 15 mm wide, moderately to strongly *glaucous* (especially a new growth) and markedly discolorous (much paler on leaf underside than upper side), often with strongly revolute margins (always strongly revolute when drought stressed).....*D.* aff. *revoluta* (East Gippsland)

2 Tissue on underside of leaf blade not sunken, i.e. not deeply grooved, between veins (not appearing corrugated in cross-section)..... 3

3 Plants very robust to 1 m or more high; long-rhizomatous to c. 20 m or more wide; leaf blades ± leathery in texture, strap-like (i.e. linear) to c. 100 cm long x c. 4 cm wide; leaf midrib (underside) and margins very strongly toothed-scabrid throughout.....*D. tasmanica*

3 Plants small, not robust, usually much less than 25 cm high with few shoots (leaf fans), long-rhizomatous, shoots often widely separated (rhizome to 1 m long between shoots); leaf blade lanceolate or linear-lanceolate to 25 cm long x 1.8 cm wide, very thin-textured; prominently scabrid-denticulate on midrib and leaf margins around junction of sheath and blade; leaf sheaths prominently longitudinally striate(with raised veins).....*D. laevis* var. *aspera*

4 Plants ultimately long-rhizomatous to 10 m or more wide, typically with well-separated shoots (i.e. not touching); plants strongly glaucous or grey-green; leaf sheaths not occluded or occlusion not more than 1/3 width of sheaths at their summit; leaves to 15 mm wide, margins of sheaths or blades and midrib on leaf underside with prominent peg-like (at maximum development) or smaller 'teeth', generally
1.5 – 2 mm apart.....*D. amoena*

4 Plants densely tussock-forming to c. 40 cm wide at base with shoots touching adjoining shoots,; leaves rich green, not glaucous or at most faintly glaucous when young only (wax soon disappearing); leaf sheaths at base with a ± papery

texture and very pale yellow-green or ivory-coloured on inner basal surface, sheaths never tinged with red at base; leaves wholly smooth or with a few small 'teeth' on underside midrib near leaf apex.....*D. laevis*

Note: All *Dianella* plants are densely tussock-forming when young for the first year or so.

Synopsis and notes on *Dianella taxa*

The salient features of the *Dianella* taxa are outlined below with notes on their distribution and habitats in the Latrobe Valley.

Dianella amoena G.W. Carr and P.F. Horsfall (Matted Flax-lily)

This EPBC-listed species is now well known and well documented. It was described by Carr and Horsfall (1995) and a Recovery Plan has been prepared by Carter (2004). The species, which always occurs in grassland or grassy woodland vegetation, was obviously common in the Latrobe Valley. Remnant populations occur in Ecological Vegetation Class (EVC) 55 Plains Grassy Woodland and EVC 151 Plains Grassy Forest. Kangaroo Grass (*Themeda triandra*) is (or was) a universally associated species with *D. amoena*. The highly distinctive flowers are illustrated in the cover plate.

Salient features: Plants extensively rhizomatous (i.e. non tussock-forming); leaves glaucous grey-green, not or only partially occluded; leaf margins and midrib with well-spaced peg-like (at maximum development) projections. Inflorescence to c. 85 cm high, mostly much less, arching. Flowers large, highly fragrant with a eugenol fragrance as in carnations (*Dianthus*). Flowers opening by mid-morning and closing around mid-afternoon. Perianth pale to rich violet-blue; strumae very large, rich orange; anthers pale yellow-green; fruits dark or dull violet-blue.

Dianella laevis R.Br. (Smooth Flax-lily)

This species a member of the *D. longifolia* R.Br. complex is probably undescribed but it is currently referred to *D. laevis,* described by Robert Brown from material he collected around Sydney (1802). In the Latrobe Valley the species occurs on moderately fertile loamy soils in EVC 55 Plains Grassy Woodland and/or EVC 151 Plains Grassy Forest.

Salient features: Plants densely tussock-forming; leaves rich green, not glaucous or at most only faintly glaucous when very young (wax soon wearing off); blades and sheaths broad, not occluded, the sheath and blade indistinct and merging continuously; base of leaves (sheaths) more-or-less papery thin-textured, very pale yellow-green or ivory (cream) coloured on inner surface. Inflorescence with a long erect peduncle (scape), panicle fairly compact. Flowers quite small (much smaller than in *D. amoena*), without detectable floral fragrance [i.e. not detectable to the human nose but for bees it is a different matter], flowers opening in early to mid-morning, closing around

mid-afternoon. Perianth pale violet-blue; strumae relatively small, rich orange; anthers pale yellow-green; fruit not exceeding c. 8 mm diameter, brilliant, shiny deep violet-blue.

Dianella laevis R.Br. var. ***aspera*** Benth

This plant is a member of the *D. caerulea* complex and in Victoria it has always gone by that name, but the two species are very distinctive. *Dianella caerulea* naturally occurs in Victoria east of the Gippsland Lakes and I have not seen them occurring together at the one location. The type specimen of *D. laevis* var. *aspera* was collected by Ferdinand von Mueller at 'Moe Swamp' in the Latrobe Valley. It is only distantly related to *D. laevis* (a member of the *D. longifolia* complex) and it will be elevated to specific rank as *D. aspera* in the near future. The species always occurs on the lower nutrient soils derived from Tertiary or Quaternary sediments – sands, sandstone and mudstone (e.g. the Haunted Hills sediments). In the Latrobe Valley it occurs in the non-grassy EVC 16 Lowland Forest vegetation. Natural hybrids have been recorded (Carr unpubl. data) between *D. laevis* var. *aspera* and *D. tasmanica* (near Powelltown) and *D.* aff. *revoluta* (East Gippsland) (see below). These hybrids are intermediate between their parents.

Salient features: Habit extensively rhizomatous, often with few distant shoots which can be up to 1 m apart on the rhizome; small leaf fans, without aerial stems (a distinguishing feature of *D. caerulea*); leaves fully occluded with the lanceolate blade usually forming an oblique angle with the sheath; sheaths longitudinally striate (raised closely - spaced veins); blade thin, dark green; with conspicuous 'teeth' on the midrib on the leaf underside and the leaf margins, particularly around the junction of the sheath and blade; inflorescence small and fairly compact (not more than c. 40 cm high); flowers violet-blue, fairly small, when fully opened the curved perianth segments are reflexed right back forming a ball-like flower; anthers violet (a character shared by only two other *Dianella* species); fruit ± globular to c. 9 mm diam., bright, glossy violet-blue.

Dianella* aff. *revoluta R.Br. (East Gippsland)

This form of the widespread Black-anther Flax-lily which has been known as *D. revoluta* in Victoria. This species however does not occur in Victoria, the most common and widespread species being *D. admixta* Gandoger. This species is abundant west of Melbourne and north of the Great Dividing Range. The entity in the Latrobe Valley, which is widespread and common on the Gippsland Plain and East Gippsland Lowlands bioregions extending into NSW, is not *D. admixta* but its taxonomy has not been resolved, i.e. what rank it should have: a species in its own right, or a sub-species of something else. Locally *D.* aff. *revoluta* (East Gippsland) occurs in EVC 55 Plains Grassy Woodland, EVC 151 Plains Grassy Forest and EVC 16 Lowland Forest.

Dianella aff. *revoluta* (East Gippsland) hybridises with *D. amoena* around Melbourne and with *D. laevis* var. *aspera* on French Island (Carr unpubl. data). The hybrids are intermediate between the parents.

Salient features: Habit rhizomatous, forming fairly dense clumps to several metres wide; leaves moderately stiff, straight or curved to c. 30 cm long x 1.5 cm wide, fully occluded; blade linear-lanceolate ± flat to strongly revolute (always strongly revolute when drought stressed), markedly discolorous with the upper surface dark yellow-green and the undersurface much paler grey-green; leaves usually glaucous, especially when young but the wax may substantially wear off; the tissue between the close-set longitudinal veins on the underside of the leaf blade is deeply sunken or grooved between the veins, hence strongly corrugated in cross-section. (This is one of the main defining features of large *D. revoluta* complex in Australia). Inflorescence fairly small and dense to c. 45 cm high; flowers with a violet-blue perianth the segments of which are evenly reflexed through about 135° (from the vertical); strumae orange-yellow; anthers brown; fruit ± globular to c. 8 mm diam., dark violet-purple.

Dianella tasmanica Hook.f.

The familiar Tasman Flax-lily is the widespread robust species of moister habitats, locally including EVC 29 Damp Forest, EVC 83 Swampy Riparian Woodland and EVC 16 Lowland Forest. It occurs on a wide range of soil types including volcanic loams and low-nutrient sandy soils. *Dianella tasmanica* forms rare hybrids with *D. laevis* var. *aspera* (Carr unpubl. data).

Salient features: characterised as follows: Plants very robust, habit extensively rhizomatous to c. 20 m or more wide; leaves fully occluded, long strap-like to 1 m or more long x up to 5 cm wide (but usually 3-4 wide); strongly denticulate-scabrid on the underside midrib and margins throughout; inflorescence robust, to c. 1.5 m high, usually laterally compressed with branches tending to arise on opposite sides of the main axis; flowers open on day one and close on day two (flowers or all other *Dianella* locally last less than one day); flowers strongly fragrant (resembling the fragrance of carnations); perianth violet-blue, segments reflexed through c. 180°; strumae large, rich yellow or orange-yellow; anther small, pale yellowish-brown, shorter than or not exceeding strumae in length; fruit large to 2.5 cm long, ovoid or ellipsoid; brilliant violet-blue.

3 References

Conran, J.G. (1994). Dianella. In 'Flora of Victoria'. Vol. 2. N.G. Walsh and T.J. Entwisle (eds). pp. 647-51. Inkata Press: Melbourne.

Carr, G.W. (2008). Victorian Dianella Checklist. (unpubl.).

Carr, G.W. & Horsfall, P.H. 1995. 'Studies in Phormiaceae (Liliaceae) 1: New species and combinations in Dianella Lam. ex Juss.', Muelleria, vol. 8 (3), pp. 365-378.

Walsh and Entwisle (1999). Additions and corrections to Vol 2 Flora of Victoria Vol 4. p 992.

Appendix 1 Checklist of Victorian *Dianella* (Hemerocallidaceae)

Checklist of Victorian *Dianella* (Hemerocallidaceae)

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Ø Indicates that the status of the taxon in Victoria is uncertain (see Ross and Walsh 2003).

♦ Indicates that the taxon is incipiently naturalised in Victoria (see Ross and Walsh 2003).

Δ indicates a taxon that is endemic in Victoria; some taxa not so marked may also be endemic.

The Flora Information System (FIS) numbers as given here mostly apply in the strict sense to the taxon.

Note: Names not in Ross & Walsh (2003) are given provisional numbers only.

No.	Conservation	Taxon	Name in Walsh and Entwisle (1999) *Fl. Victoria* Vol. 4 supplement, based on Conran (1994) and Carr and Horsfall (1995)	Unpublished ms. name	Distribution							Distribution by Victorian Bioregion											FIS Number
					WA	Vic	Tas	SA	NSW	Qld	ACT	1	2	3	4	5	6	7	8	9	10	11	
		(a) *Dianella caerulea* Sims group																					
1	Kv	*D.* aff. *caerulea* Sims *sens. lat.*	*D. caerulea* Sims var. *caerulea*	—		+			+	?									8.1				5561
2	Kk	*D.* aff. *caerulea* Sims (Lake Tyers)				+			?							5.1							7669
3	–	*D.* sp. aff. *caerulea* Sims (Eastern Victoria) (Paroo Lily)	*D. caerulea* Sims var. *caerulea*	—		+	?		+	+						5.1			8.1 8.2		10.1		7392
4	Kk	Δ *D.* sp. aff. *caerulea* Sims (Powelltown)	*D. caerulea* Sims var. *caerulea*	—		+															10.2		7670
5	Rr	*D. callicarpa* G.W. Carr & P.F. Horsfall (Swamp Flax-lily)	*D. callicarpa* G.W. Carr & P.F. Horsfall	—		+		+					2.1	3.1		5.2 5.3	6.3						5086
6	–	♦*D.* aff. *callicarpa* G.W. Carr & P.F. Horsfall (Bundoora)	—	—		+								3.1									5968
7	–	*D. laevis* R.Br. var. *aspera* Benth. (Rough Flax-lily)	*D. caerulea* Sims var. *caerulea*	*D. aspera* (Benth.) G.W. Carr & P.F. Horsfall *ined.*		+	?		+							5.1	? 6.3		8.1 8.2		10.1 ? 10.3		5558
		(b) *Dianella longifolia* R.Br. group																					
8	Ee	*D. amoena* G.W. Carr & P.F. Horsfall (Matted Flax-lily)	—	—		+	+							3.1		5.1	6.1				10.2		5084
9	–	*D. laevis* R.Br. (Smooth Flax-lily)	*D. longifolia* R.Br. var. *longifolia*	—		+	?		+	?						5.1	6.1 6.2		8.1 8.2		10.1 10.4		5559
10	Rv	*D.* sp. aff. *longifolia* R. Br. (Mallacoota) (Flax-lily)	*D. longifolia* R.Br. var. *longifolia*	*D. argillicola* G.W. Carr *ined.*		+			+							5.1			8.2				7393
11	Kv	*D.* sp. aff. *longifolia* R.Br.	*D. longifolia* R.Br. var. *grandis*	*D. perfragrans* G.W. Carr & P.F.		+	?	?	+	?	+	1.3		3.1	4.1	5.2	6.1	7.1	8.2		10.2		5560

No.	Conservation	Taxon	Name in Walsh and Entwisle (1999) *Fl. Victoria* Vol. 4 supplement, based on Conran (1994) and Carr and Horsfall (1995)	Unpublished ms. name	Distribution							Distribution by Victorian Bioregion										FIS Number
					WA	Vic	Tas	SA	NSW	Qld	ACT	1	2	3	4	5	6	7	8	9	10	11	
		(Benambra) (Arching Flax-lily)	R.J.F. Hend.	Horsfall *ined.*												5.3	6.2 6.3 6.4						
12	?Ve	*D.* sp. aff. *longifolia* R. Br. (Bonang) (Flax-lily)	*D. longifolia* R.Br. var. *longifolia*	—		+			?												10.5		7671
13	Kk	Ø *D.* sp. aff. *longifolia* R.Br. (Montrose) (Flax-lily)	—	*D. hortorum* G.W. Carr & P.F. Horsfall *ined.*		+															10.1		7396
14	Kv	*D.* sp. aff. *longifolia* R.Br. (Riverina) (Pale Flax-lily)	*D. longifolia* R.Br. var. *grandis* R.J.F. Hend.	—		+		?	+	?		1.2 1.3			4.1								7399
15	Kv	*D. porracea* (R.J.F. Hend.) P.F. Horsfall & G.W. Carr (Riverine Flax-lily)	*D. porracea* (R.J.F. Hend.) P.F. Horsfall & G.W. Carr	—		+		+	+	+					4.1 4.2 4.3			7.1					4266
16	Vv	*D. tarda* P.F. Horsfall & G.W. Carr (Late-flower Flax-lily)	*D. tarda* P.F. Horsfall & G.W. Carr	—		+			+						4.1		6.1 6.2						5085
		(c) *Dianella revoluta* R.Br. group																					
17	–	*D. admixta* Gand. (Black-anther Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	—		+	?	+	+	?	+	1.1 1.2 1.3	2.1 2.2	3.1	4.1	5.2 5.3	6.1 6.2 6.3	7.1			10.1 10.2		5555
18	–	*D. brevicaulis* (Ostenf.) G.W. Carr & P.F. Horsfall (Small-flower Flax-lily)	*D. brevicaulis* (Ostenf.) G.W. Carr & P.F. Horsfall	—	+	+	+	+	+			1.1 1.2 1.3	2.1 2.2	3.1		5.1 5.2 5.3			8.1	9.1	10.3 10.4		4412
19	Ee	Δ *D. brevicaulis* (Ostenf.) G.W. Carr & P.F. Horsfall *var. nov.* (Lake Bolac Flax-lily)	*D. brevicaulis* (Ostenf.) G.W. Carr & P.F. Horsfall	*Dianella brevicaulis* (Ostenf.) G.W. Carr & P. F. Horsfall var. *leucantha* G.W. Carr *ined.*		+										3.1							7668
20	Ke	*D.* sp. aff. *revoluta* R.Br. (Albury) (Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	—		+			+						4.1								7400
21	Kk	Δ *D.* sp. aff. *revoluta* R.Br. (Bass) (per T. Barlow) (Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	—		+										5.1							7401
22	Kr	*D.* sp. aff. *revoluta* R.Br. (Burrowa) (Showy Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	*D. decora* G.W. Carr *ined.*		+			?									7.1					7402
23	–	*D.* sp. aff. *revoluta* R.Br. (Coastal) (Coast Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	*D. maritima* G.W. Carr & P.F. Horsfall *ined.*		+	+	+					2.1 2.2	3.1		5.1 5.2 5.3				9.1	10.3 10.4		5557
24	Kk	*D.* sp. aff. *revoluta* R.Br. (Cobboras) (Snow-gum Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	*D. sticta* G.W. Carr *ined.*		+			?												11.1	7416
25	Vv	*D.* sp. aff. *revoluta* (Condah)	*D. revoluta* R.Br. var. *revoluta pro parte*	*D. oligophylla* G.W. Carr *ined.*		+								3.1								7672
26	Ee	Δ *D.* sp. aff. *revoluta* R.Br. (Crib Point) (Slender Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	*D. exilis* G.W. Carr & P.F. Horsfall *ined.*		+										5.1							5552

No.	Conservation	Taxon	Name in Walsh and Entwisle (1999) *Fl. Victoria* Vol. 4 supplement, based on Conran (1994) and Carr and Horsfall (1995)	Unpublished ms. name	Distribution							Distribution by Victorian Bioregion											FIS Number
					WA	Vic	Tas	SA	NSW	Qld	ACT	1	2	3	4	5	6	7	8	9	10	11	
27	–	Δ *D.* sp. aff. *revoluta* R.Br. (East Gippsland) (Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	—		+	?		+							5.1			8.1				7417
28	Kr	*D.* sp. aff. *revoluta* R.Br. (Genoa) (Eastern Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	*D. microstruma* G.W. Carr & P.F. Horsfall *ined.*		+	?		+										8.1				5562
29	Vv	*D.* sp. aff. *admixta* Gand. (Lawloit Range) (Wimmera Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	—		+		+				1.1 1.3											7455
30	–	*D.* sp. aff. *revoluta* R.Br. (Mallee) (Mallee Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	*D. concolor* G.W. Carr & P.F. Horsfall *ined.*		+		+	+			1.1 1.2 1.3											5553
31	Ee	Δ *D.* sp. aff. *revoluta* R. Br. (Minjah) (Basalt Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	*D. minjah* G.W. Carr *ined.*		+								3.1									7463
32	–	*D.* sp. aff. *revoluta* R.Br. (Montane) (Mountain Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	*D. oreophila* G.W. Carr & P.F. Horsfall *ined.*		+			+		+										10.1 10.2	11.1	5556
33	–	*D.* sp. aff. *revoluta* R.Br. (North-west Victoria) (Stiff Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	*D. perstricta* G.W. Carr & P.F. Horsfall *ined.*		+		+	+			1.1 1.2 1.3					6.1						5554
34	Kk	*D.* sp. aff. *revoluta* R.Br. (Snowy River) (per S. Mathews) (Flax-lily)	*D. revoluta* R.Br. var. *revoluta pro parte*	—		+			?										8.2				7460
35	Kk	*D.* sp. aff. *revoluta*	*D. revolute* R. Br var. *revoluta pro parte*	*D. oxyantha* G.W. Carr		+															10.1		–
		(d) *Dianella tasmanica* Hook. f. group																					
35	–	*D. tasmanica* Hook. f. (Tasman Flax-lily)	*D. tasmanica* Hook. f.	—		+	+		+		+			3.1		5.1 5.2 5.3	6.2 6.3		8.1 8.2	9.1	10.1 10.2 10.3 10.4 10.5	11.1	1030
36	–	*D.* sp. aff. *tasmanica* Hook. f. (Snowfields) (Snow Flax-lily)	*D. tasmanica* Hook.f.	*D. chlorocarpa* G.W. Carr & P.F. Horsfall *ined.*		+			+		+											11.1	5551
37	Kr	*D.* sp. aff. *tasmanica* Hook. f. (Snowy River) (Rock Flax-lily)	*D. tasmanica* Hook.f.	*D. cremnophila* G.W. Carr & P.F. Horsfall *ined.*		+			+										8.2				5550

Bioregions (Source: NRE Corporate Geospatial Data Library, August 2002)

1.1 Lowan Mallee
1.2 Murray Mallee
1.3 Wimmera
2.1 Glenelg Plain
2.2 Bridgewater
3.1 Victorian Volcanic Plain
3.2 Victorian Riverina
4.2 Murray Scroll Belt
4.3 Robinvale Plain
4.4 Murray Fans
5.1 Gippsland Plain
5.2 Otway Plain
5.3 Warrnambool Plain
6.1 Goldfields
6.2 Central Victorian Uplands
6.3 Greater Grampians
7.1 Northern Inland Slopes (Dundas Tablelands)
8.1 East Gippsland Lowlands
8.2 East Gippsland Uplands
9.1 Wilsons Promontory
10.1 Highlands – Southern Fall
10.2 Highlands – Northern Fall
10.3 Otway Ranges
10.4 Strzelecki Ranges
10.5 Monaro Tablelands
11.1 Victorian Alps

References

Carr, G.W. & Horsfall, P.H. 1995. 'Studies in Phormiaceae (Liliaceae) 1: New species and combinations in *Dianella* Lam. ex Juss.', *Muelleria,* vol. 8 (3), pp. 365-378.
Conran, J.G. 1994. '*Dianella*', in *Flora of Victoria*, vol. 2, eds. N.G. Walsh and T.J. Entwisle, Inkata Press, Melbourne, pp. 647-51.
Ross, J.H. and Walsh, N.G. 2003. *A Census of the Vascular Plants of Victoria*. Edn. 7 Royal Botanic Gardens: Melbourne.
Walsh, N.G. and Entwisle, T.J. eds. 1999. *Flora of Victoria,* vol. 4, Inkata Press, Melbourne.

Appendix 2 Collection and curation of material of *Dianella* Lam. ex Juss. and *Rhuacophila* Blume (Hemerocallidaceae) for herbarium and living collections

Collection and curation of material of *Dianella* Lam. ex Juss. and *Rhuacophila* Blume (Hemerocallidaceae) for herbarium and living collections

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1. Abstract

The genera *Dianella* Lam. ex Juss. and *Rhuacophila* Blume (Hemerocallidaceae) have been very poorly served by taxonomists and there are far more species than currently allowed; *Dianella* for example has over 350 species. This taxonomic disarray has resulted from poor collection and curation of material, with minimal data accompanying collections. To rectify this the kinds of plant material and data essential for useful herbarium and live collections are described in this article.

Emphasis is placed on collecting detached and separately pressed (or wet collections), of flowers and data on *in vivo* colours of vegetative and floral organs.

2. Introduction

The monocot genus *Dianella* Lam. ex Juss. (Hemerocallidaceae) has traditionally been considered to be a small genus with c. 30-40 species (Henderson 1987; Clifford *et al.* 1998). *Rhuacophila* Blume was subsumed within *Dianella* by Kunth (1850), Schlittler (1940, 1948) and by Jessop (1979) but it is abundantly distinct from *Dianella* (Henderson 1991; Clifford *et al.* 1998; Carr 2006a) and probably closer to *Stypandra* R. Br. and *Thelionema* R.J.F. Henderson. The type of *Rhuacophila* is *R. javanica* Blume and the genus is allegedly monotypic (Clifford *et al.* 1998) although three species and four unfraspecific taxa have been described. On current indications there are likely to be at least five species, accepting at least three species or infraspecific taxa described from Indonesia (see Jessop 1979) and at least two undescribed species from Bornean Malaysia (Carr 2006a, unpubl. data).

Approximately 100 valid names have been published in *Dianella*, many at infraspecific rank (e.g. Henderson 1987), most of which require elevation to specific rank. There has been a spate of species described in recent years (Henderson 1987, 1991; Carr and Horsfall 1995; Carr 2006b; Heenan and de Lange 2007) and in excess of 250 new taxa await description (Carr 2007a; Carr and Horsfall unpubl. data). Most of these are Australian but at least 14 undescribed species occur in Malaysia and Indonesia (Carr 2006a, 2007b, unpubl. data). Some statistics illustrate this trend in increasing recognition of taxa : 34 *Dianella* taxa are now known from Victoria (Carr 2007a) rather than the 10 accounted for by Conran (1994) and Carr and Horsfall (1995); similarly, five *Dianella* species and two *Rhuacophila* species occur on Mt Kinabalu,

North Borneo, rather than one *Dianella* and one *Rhuacophila* (*sensu* Beaman and Beaman 1998) (Carr 2006a, 2007a, submitted).

Dianella is overwhelmingly Australian where it has radiated extensively into diverse environments, apparently from rainforest stock. It is inferred to have dispersal, via birds, from Australia, New Guinea, New Zealand and New Caledonia to south-east and south Asia, continental Africa (one species) and the Pacific Basin as far east as Hawaii and Pitcairn Islands (Carr in prep.). There are numerous island endemics in the Pacific and many fairly narrow endemics elsewhere, including mountains in tropical south-east Asia. *Rhuacophila* is much more restricted, occurring in Malesia, Fiji and New Caledonia.

The reasons for the massive discrepancy between the total described taxa and the actual number of *Dianella* species was outlined by Carr (2007a); far from being a small genus, it is one of the most speciose in Lilianae with at least 350 species. The reasons *Dianella* and *Rhuacophila* have been so poorly served in taxonomic and floristic accounts are as follows:

(i) Dried herbarium material has almost always been poorly collected and curated with scant data other than location and collector. Even well-pressed and well-curated material loses the colour of most or all organs; great weight is placed on colour (see Table 1)

(ii) Collection and curation of herbarium material in the humid tropics is notoriously difficult.

(iii) The biology of *Dianella* and *Rhuacophila* is such that special techniques (notably for floral material) as well as types of data are required to collect useful herbarium material.

(iv) Much of the taxonomic work on *Dianella* and *Rhuacophila* has been carried out by taxonomists unfamiliar with living material and often remote from collection locations (e.g. Schlittler 1940; Jessop 1979; Henderson 1987).

(v) Flora accounts are frequently uncritical reiterations of previous work, e.g. Conran (1994) and Wilson (1993) following Henderson (1987).

In this article I describe the collection techniques appropriate for *Dianella* and *Rhuacophila* material to make herbarium and living collections, and the kinds of data required to accompany the collections. My aim is to enable field collectors to make maximally useful collections, and to encourage wider collection of *Dianella* and *Rhuacophila* in the hope of rectifying the woefully inadequate state of the current taxonomy - countries with naturally occurring *Dianella* and *Rhuacophila*, and those with naturalised *Dianella*.

3. Character states and biology of *Dianella* and *Rhuacophila* relevant to collection of material

There is a very large suite of qualitative and quantitative macroscopic and microscopic, characters and character-states in *Dianella* enabling the recognition of taxa and ready discrimination between them. Continuous variation in vegetative and fertile characters, as implied by the literature, is *not* a feature of *Dianella*, *contra* Jessop (1979) for example, who synonymised a heterogeneous group of 17 *Dianella* species under *D. ensifolia* (L.) DC., the type species, which was collected in India (Henderson 1987). Vegetative and fertile character states in *Dianella* are outlined in Table 1 to illustrate the range of characters available, and to indicate the appropriate collection methods outlined below. *Rhuacophila* is very poorly known and it is not discussed further, however most comments that apply to *Dianella* apply to *Rhuacophila* and these should guide all collectors dealing with *Rhuacophila* in the field or live plants in cultivation.

The general morphology of *Dianella* is outlined by Henderson (1987) and Clifford *et al.* (1998) and an understanding of the floral biology of *Dianella* is critical. Flowers of *Dianella* are evanescent and in all species, except the *D. tasmanica* Hook. f. group, flowers open and collapse on day one; they do not remain open for more than about four to six hours. In the four

species of the *D. tasmanica* group (three undescribed) flowers span two days (Carr unpubl. data). At the end of anthesis in all *Dianella,* the cells of the perianth and strumae lyse and liquefy, thus most *Dianella* collections, pressed at the end of the day, have few if any useful floral features available in the pressed material. Such floral material cannot be reconstituted by soaking. This aspect of floral biology is a major reason the taxonomy is inadequate. It is also the reason why almost all collections I have inspected in diverse herbaria (e.g. AD, BO, MEL, NSW, SNP) would not serve as useful types, despite the fact that numerous new species are represented in the collections. The adequate circumscription of taxa from such material is not possible.

Table 1. Important characters and character states in *Dianella*

Characters	Notes
1. Habit	Evergreen, rarely deciduous or facultatively ± deciduous (during drought conditions) perennial herbs; habit in species ranges from densely caespitose (very short rhizomes) to 30 m or more wide (sympodium long-rhizomatous) (**diagnostic features**).
2. Roots	May be short and tuberous (rarely) (*D. rara* R. Br), long fibrous-tuberous, to fibrous; the type of roots is species specific; the colour of roots is not usually diagnostic (**diagnostic features**).
3. Rhizomes	The length of rhizomes – short (few mm) to long (± 1 m) –is diagnostic but may not be expressed in young plants; rhizome diameter as well as the colour and texture of cataphylls may be diagnostic. Rhizome architecture is essentially undocumented, but clear differences exist (e.g. combination of short shoots and long shoots) and should be noted (**diagnostic features**).
4. Fertile shoots	Laminate leaves of each fertile shoot range from 0, to 1 to 22 depending on species (highly diagnostic). Shoots may be ± acaulescent to long-caulescent (stems to ± 2 m or more), high unbranched, or with 1-2 orders of extra-vaginal branching. The diameter and shape of stem in transverse section and internode distance are important (**highly diagnostic**).
5. Leaves	Leaf (sheath and lamina) size; shape; colour(s) (abaxial and adaxial sides); texture; glaucousness; anatomy; micromorphological surface features; whether blade ± plane, channelled or revolute; degree, type and distribution of epidermal 'teeth' on abaxial midrib and leaf margins (**highly diagnostic**).
6. Inflorescences	Size, shape, length, angle and posture of branches, shape in cross section; colour of scape and branches, epidermal projections; number of flowers and arrangement on cymule are diagnostic and very variable between species. Inflorescences are rarely somewhat perennial, i.e. capable of remaining alive to initiate a second round of flowering in the following year or subsequent to the first flowering bout (**highly diagnostic**).
7. Flowers	Numerous floral features are highly significant and show little variability, e.g.: number of flowers per cymule; presentation of flowers (pendant, subpendant or lateral); length of pedicel and shape in transverse section; size, shape and colour of tepals; time of opening of flowers - from c. 0600 to 1700 hours; eugenol floral fragrance (detectable in few species but diagnostic); features of anthers – length and shape of filaments, size and shape of strumae, size and shape of anthers – and colours of these organs; and size, shape, colour and number of ovules per ovary loculus (**highly diagnostic**).
8. Fruits	Size, and colour of fruits (berries) is important; they are almost always intense

	violet-blue, rarely in some species green, white, orange yellow or blue-black. Texture of fruits is very soft, or rarely quite hard (green fruited species). Ripe fruits may be firmly attached to the infructescence (pedicels) or ± caducous (dislodged at a touch) (**highly diagnostic**).

4. Collecting *Dianella* material

Collecting material for dried herbarium collections (including vouchers for live collections), and the accompanying data required is outlined here for flowering and fruiting plants. Material should consist of at least one fertile shoot, including rhizome and roots. Ideally two or more shoots are desirable depending upon size. Rhizomes and roots must be dug from the substrate/soil; shoots pulled from the substrate will often leave the rhizome and roots behind.

This material is pressed in the conventional way according to techniques appropriate to tropical or temperate zones, but special procedures are required for flowers (see below). Inflorescences, if large, are best cut off with most of the scape and pressed separately. Leaves, if large and/or numerous, can be cut from one side of the shoot and discarded. Leaves and inflorescences are arranged to best and unambiguously display salient features and facilitate drying, rather than bunched up, or organs excessively superimposed.

It is essential to apply sufficient pressure in the press to ensure leaves are held flat until dried. If not held flat, leaves of most species will become severely revolute with margins curled on drying. Drying in pressed *Dianella* is fairly slow (without artifical heat) but plants should only be removed from the press when thoroughly dry, otherwise leaf margins will rapidly become revolute.

Flowers, which are evanescent and fragile, are individually cut from pedicels and pressed separately between soft materials, ideally tissue paper between foam 'rubber' sheets, so that organs are pressed flat without shrivelling. Flowers are often pressed (by me) in a book rather than in a press. Drying of flowers under these conditions is rapid (1-2 days). Flowers should be pressed as soon after opening as possible; perianth margins of late-picked flowers can begin to lyse. The perianths and anthers of pressed flowers can be measured because they do not shrink if well pressed. Dimensions of strumae and features of the filaments must be obtained from reconstituted (rehydrated) flowers.

Fruits (or some fruits) are detached and air dried to avoid crushing in the press; collect a range of fruit sizes (often quite a variable feature depending on the number of seeds matured.).

5. Collecting live material

Comparative study of live (cultivated) plants has been absolutely crucial to our taxonomic studies of *Dianella* (Carr and Horsfall 1995, Carr 2006b), additionally many species have been described from cultivated plants (e.g. Henderson 1987) and many will be described from cultivated material. There are for example at least 10 undescribed cultivated species in Indonesian botanic gardens and many of these have provided type material for new species (Carr unpubl.). Most species are readily cultivated by mimicking the general conditions they experience in nature. At least three shoots with attached rhizome(s) are desirable from each plant collected; material must be dug up to ensure roots are attached and the rhizome is undamaged. Potted plants are placed in a closed environment (e.g. large plastic bag) to prevent desiccation until roots are initiated (generally 3-6 weeks), thus allowing water uptake in the plant. Cultivated plants are kept in containers or planted in the open ground. It is desirable to collect several individual plants (3-5) from a population to test within - population variability (typically very low) and facilitate outcrossing if plants are to be used as a source of seed for propagation, although *Dianella* are highly to moderately self-fertile (c.f. Duncan *et al.* 2004).

6. Data to accompany collections

Aside from the usual data accompanying collections such as date, location, and collectors (see for example Albrecht 1993) certain other data are essential for material to be maximally useful for taxonomic purposes or enable accurate identification or circumsciption.

Great weight is placed on features of *Dianella* plants which cannot necessarily be determined or are often inevident in herbarium collections, or are always lost on drying. These include (Table 1): habit of the plant and colour of various organs, especially leaves, flowers (perianth, androecium and gynaecium) and fruits. In formal descriptions (Carr and Horsfall 1995; Carr 2006b) colours or organs are given according to the 1986 reprint of the Royal Horticultural Society Colour Chart (RHS London, and Flower Council of Holland, Leiden). In the absence of a colour chart, colours are accurately described and good-quality photographs, including close-ups (macrophotos) of opened flowers are essential. Photographs must be lodged with the herbarium material. Note that leaves, flowers (and occasionally fruits) have several colours per organ: abaxial and adaxial sides of leaf, and often with various markings on leaf bases or sheaths (e.g. Carr and Horsfall 1995; Neenan and de Lange 2007); perianth, and perhaps filaments. The strumae and anthers, ovary and style are usually concolorous. The glaucousness of the leaves (non-glaucous to highly glaucous) is a very important feature to note.

The habit of mature plants is crucial information: height of plant and branching patterns, and width of the whole plant measured or estimated at the outside bases of shoots; posture of leaves (e.g. stiffly erect, lax, arcuate). Photographs of *in situ* plants are very valuable.

Dimensions of floral organs and fruits

The time of anthesis, that is diel flowering time, is often very important and sometimes diagnostic and should be noted if known. Flowers in some species open as early as 0600 hours (e.g. *D. caerulea* Sims var. *assera* R.J.F. Hend.), while in others they do not open until very late in the day, e.g. in *D. tarda* P.F. Horsfall and G.W. Carr flowers open at c. 1700 hours. In all species except the *D. tasmanica* complex, flowers last from 3-6 hours only, after which they collapse.

Assuming flowers have been individually pressed and dried, or wet collections made and fruits dried, the dimensions, shape and proportions of all floral organs can be measured and described (by subsequent users of the material) from rehydrated or wet-collection flowers, ideally in conjunction with photographs. Flowers immersed in hot water with detergent rehydrate fully within a few minutes; fruits take longer. Fruits do not require rehydration to remove seeds for examination, scanning electron micrography, or to count ovules or seeds. Wet collections of flowers or fruits are preferable but the perianths of flowers always close somewhat when immersed in alcohol; the *in vivo* posture of perianth segments (sometimes diagnostic) is lost, hence the desirability of photographs of fully-opened flowers. Flowers only open *fully*, with characteristic reflexing of tepals, when temperatures are optimum, which may not occur on all days during the flowering season especially in plants cultivated in colder climates compared with those in which they naturally occur.

Ecological data and notes

It is important, often aiding greatly in identification or interpretation of the material and of its taxonomic position, to collect some information on the environment and vegetation community in which the collection is made. Some *Dianella* species have a very broad ecological amplitude and occur in a range of quite different environments. By contrast, other species are very restricted narrow-endemics confined to specific geologies, substrates, vegetation communities and altitudes. Where plants are collected for cultivation the environmental information may be particularly important to enable conditions to be mimicked in cultivation.

The following information is thus considered important to accompany collections: geology, soil type, vegetation community/subcommunity and or associated plant species, conditions e.g. sun/shade, soil moisture relations and animal-plant interactions.

7. Summary

1. Most herbarium collections of *Dianella* are very inadequate, i.e. poorly collected, poorly pressed and often poorly curated. They invariably lack adequate or comprehensive data (e.g. habit, colour of salient organs) and such material is the principal reason for the grossly inadequate taxonomic accounts of a genus which is about and order of magnitude more speciose than currently acknowledged.
2. To rectify this situation I outline here the kinds of material and data that need to be collected by botanists/collectors, and some special protocols for collecting, notably to sample the evanescent floral material and note in detail the colour of various organs. These protocols apply for dry herbarium material and vouchers for living collections.
3. Collectors are urged to provide the following material and data:
    - Sample several plants in the population
    - Collect one or several fertile shoots with attached rhizomes
    - Whole, well-developed inflorescence may need to be detached from their shoots if large, and pressed separately
    - Individually press flowers cut from the pedicel as early as possible after opening, alternatively make wet collections of flowers (and fruits)
    - Fruits, which are air dried or wet-collected
    - Data on colour of organs ideally using standard colour charts, viz.: leaf surfaces (abaxial and adaxial) as well as colour of markings on leaf, sheaths, and margins or bases as relevant; colour of scape and inflorescence branches and pedicels; colour of floral organs – perianth (abaxial and adaxial, including markings, e.g. veins), filaments, strumae, anthers, ovary, style; and ripe fruit.
    - Diel anthesis times: time of day flowers open and time of the day they close
    - Floral fragrance (if detectable)
    - Habit of plant, including diameter (at outside shoot bases) and branching patterns of aerial shoots if present are characteristic, as are posture, texture, etc of leaves
    - Photographs of *in situ* plants, macrophotos of flowers and of fruits.
    - Data on the geology, substrate type, vegetation community and other environmental details as relevant.

8. Acknowledgements

I am grateful to Carole McWilliam (Ecology Australia Pty Ltd) for assistance in producing this article.

9. References

Albrecht, D. (1993). *Collecting and preserving herbarium specimens*. National Herbarium, Melbourne.

Beaman, J.H., and Beaman, R.S. (1998). *The Plants of Mount Kinabalu. 3. Gymnosperms and non-orchid moncotyledons*. Natural History Publications (Borneo) and Royal Botanic Gardens, Kew, UK.

Carr, G.W. (2006a). Preliminary investigation of the *Dianella* Lam. ex Juss., *Rhuacophila* Blume and Hemerocallis L. (Hemerocallidaceae) flora of Mt Kinabalu, Sabah, Malaysia. Ecology Australia, Fairfield. (Unpubl. report available in the libraries of BO, K, MEL, NSW and SNP).

Carr, G.W. (2006b). *Dianella tenuissima* (Hemerocallidaceae), a remarkable new species from the Blue Mountains, New South Wales, Australia. *Telopea* 11: 300-306.

Carr, G.W. (2007a). Taxonomy of *Dianella* and implications for conservation. *Australasian Plant Conservation* 16 (1): 11-13, coverplate.

Carr, G.W. (in prep.). A review of seed dispersal in *Dianella* (Hemerocallidaceae). Unpubl. ms.

Carr, G.W. and Horsfall, P.F. (1995). Studies in Phormiaceae (Liliaceae) 1: New species and combinations in *Dianella* Lam. ex Juss. *Muelleria* 8: 365-378.

Carr. G.W. (submitted) *Dianella, Rhuacophila* and *Hemerocallis* (Hemerocallidaceae) at Mt Kinabalu National Park, Sabah, Malaysia, and implications for the wider *Flora Melesiana* region. Submitted to *Blumea*.

Clifford, H.T., Henderson, R.J.F. and Conran J.G. (1998). Hemerocallidaceae. *The Families and Genera of Vascular Plants* Ed. K. Kubitzki. pp. 245-253. Springer-Verlag, Berlin.

Conran. J.G. (1994). Liliaceae. In: N.G. Walsh and T.J. Entwistle (Eds.). *Flora of Victoria* Vol. 2, pp. 337-686. Inkata Press, Melbourne.

Duncan, D.H., Nicotra, A.B. and Cunningham, S.A. (2004). High self-pollen transfer and low fruit set in buzz-pollinated *Dianella revoluta* (Phormiaceae). *Australian Journal of Botany* 52: 185-193.

Heenan, P.B. and de Lange, P.J. (2007). Two new species of *Dianella* (Hemerocallidaceae) from New Zealand. *New Zealand Journal of Botany* 45: 269-285.

Henderson, R.J.F. (1987). *Dianella. Flora of Australia* 45: 194-225, 434-437, 476-485.

Henderson, R.J.F. (1991). Phormiaceae, pp. 578-582. In: A.C. Smith, *Flora Vitiensis Nova* Vol 5. National Tropical Botanical Garden, Hawaii.

Henderson, R.J.F. (1991). Studies in *Dianella* Lam. ex Juss. (Phormiaceae) 2. *Austrobaileya* 3: 473-480.

Jessop, J.P. (1979). Liliaceae. *Flora Malesiana* 9: 206-209.

Kunth, K.S. (1850). *Enumeratio plantarum* 5. J.Cott, Stuttgart.

Schlittler, J. (1940). Monographie der Liliaceengattung *Dianella* Lam. *Mitt. Bot. Mus. Univ. Zürich* 163: 1-283, t. 1-35.

Schlittler, J. (1948). Unsere gegenwaertige kenntnis ueber die Liliaceengattung *Dianella* in Malesien. *Blumea* 6: 200-228.

Wilson, K.L. (1993). Phormiaceae. *Flora of New South Wales* Vol. 4, pp. 73-80. New South Wales University Press, Kensington

Department of Sustainability and Environment

Matted Flax-lily

Dianella amoena

A nationally threatened species of native grassland communities

Once reasonably wide spread across Victoria and Tasmania, the Matted Flax-lily *(Dianella amoena)* is thought to be extinct in Tasmania and has limited populations scattered across central and southern Victoria. Its distribution in Victoria ranges from the Gippsland Plains, across Melbourne to the Western Plains, through Central Victoria and over to the Grampians.

Some of the largest populations are found in the Latrobe Valley near Traralgon, where there are 11 sites with a total of approximately 450 plants. The largest single site of 380 plants has been recorded in the road reserve between Traralgon and Rosedale.

Description

Matted Flax-lily *(Dianella amoena)* is a tufted perennial lily. The close growth proximity of individual plants leads to the development of loose 'mats', which can be up to five metres wide.

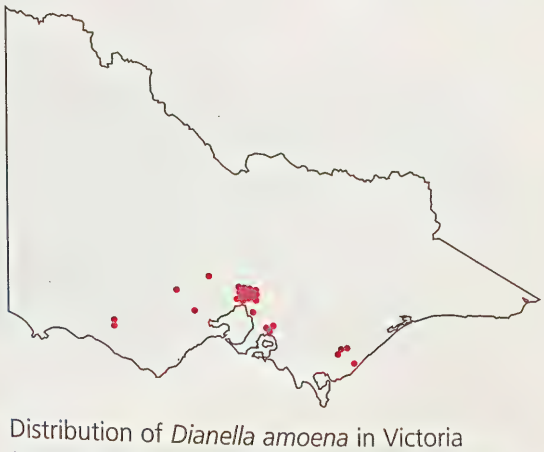
The grey-green, narrow and linear leaves are relatively small for the genus Dianella, tapering to 43 cm long by 4-12 mm wide.

One of the features that distinguish this species is the presence of prominent teeth-like outgrowths up to 0.5mm in length on the margins of the leaf blades, sheaths and midribs.

The flowers are large, nodding and highly fragrant, with colours ranging from pale to deep blue violet. The flower stems are arching and 20cm to 90 cm in length. Flowering occurs from October to April, but generally through Spring and Summer. When pollinated, the flowers become 7 mm round purple berries and when ripe, seeds are black and shiny.

Many plants also have a distinct red colouration at the base of the leaves.

The plant's habitat is generally lowland grasslands, grassy woodlands and grassy wetlands. It grows in well-drained to seasonally wet soils.



Distribution of *Dianella amoena* in Victoria
(Source: Flora Information System, DSE 2004)

Natural Heritage Trust
Helping Communities Helping Australia
A Commonwealth Government Initiative

Victoria
The Place To Be

Matted Flax-lily *Dianella amoena*

Ripe berries

Typical grassy habitat

Conservation status

Matted flax-lily is listed as Endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and is being nominated for listing under the *Flora & Fauna Guarantee Act 1988*. The advisory list for Victorian rare or threatened species also lists this species as Endangered (DSE 2006). Current estimates are around 1400 individuals across 120 sites.

Decline and threats

The decline of the Matted Flax-lily has been largely attributed to land clearing for farming and urban development, grazing pressure from introduced herbivores such as livestock and rabbits, and inappropriate fire regimes leading to the build up of biomass.

The fragmentation of natural remnants has also had significant impact on this species and means that most Matted Flax-lily sites are restricted to roadsides and rail reserves. The majority of these sites are either unreserved or located in reserves not actively managed for conservation.

Other limiting factors to its natural re-establishment include weed competition, lack of fire, lack of native bee pollination, and exotic mite predation.

Similar species

Matted Flax-lily is similar to many other related Flax-Lilies, such as Black-anther Flax-lily *(Dianella admixta)* and Paroo lily *(Dianella sp.aff.caerulea)*. The differing features of Flax-lilies can be seen in the leaf size and colour and the height of the flowering stems.

How can I help?

- If you believe you have found *Dianella amoena*, please contact your local DSE office
- Don't pick the flowers or fruit from the plant
- Contact DSE prior to undertaking works such as grazing, slashing, mowing or soil disturbance where Significant Native Vegetation signs are located
- Avoid grazing of the species during flowering and seeding months (Spring/Summer)
- Encourage the regeneration of native grassland/ grassy woodlands in areas historically known for this vegetation type

Why are threatened species important?

- An essential component of ecosystem health is the diversity of species. Any loss of species is a reduction in our overall biodiversity, which in turn can affect ecosystem processes such as nutrient cycling, carbo dioxide/oxygen balance and control of pests and disease
- Threatened species are often indicators of vegetation types that are also threatened and any works to protect these individual species will also benefit the vegetation community they belong to
- Threatened species can often have other species dependant on them for their survival
- The majority of our threatened species are endemic to Australia, that is, they do not occur anywhere else in the world, and without intervention and pro-active management, these species will most likely become extinct

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Robin Philbey
81 Stockdale Road,
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16 January 2008

Dear Robin,

I am writing with regard to the eight *Dianella* specimens, which you submitted for determination which we received on the 9 January 2008. The specimens have been examined by Geoff Carr (authority on the genus *Dianella*), and he has determined specimens as follows:

numbers 1, 3, 4, 6, and 7 = *Dianella amoena*
Number 2 & 5 = *Dianella* sp. ? *amoena* (flowering material required)
Loose specimen in plastic bag (Site 1) = *Dianella amoena*

At least one of the specimens is adequate as a voucher for our collection to substantiate the record of the species in your area. Thanks very much for the donation, which is appreciated.

With regards,

Val Stajsic
Identifications & Research Botanist

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Dianella amoena — Matted Flax-lily.

Character.	Dianella revoluta var revoluta	D. caerulea	D. amoena.
Height. Habit. Leaves.	Tall 80cm Tufted clumpsto. 1m in diam Often glaucous Margins revolute Midrib virtually to quite smooth.	.5m Forming sparse clumps. Dark green Usually widely spreading, often virtually prostrate lamina flat or margins somewhat recurved. 10-25cm long-See below	to 90 cm. extensive loose mats. small, lamina narrow, linear-lanceolate to 43cm x 4-12mm wide thin broadly v-shaped or nearly flat; prominently keeled beneath along the midrib grey-green often marked dull crimson at base loosely clasping, teeth to 0.3mm
Leaf sheaths. Inflorescence.	Commonly reddish Mostly exceeding foliage ovate to narrow conical in outline, peduncles > 15 cm long. Rather sparse.	Closely folded + fused about midrib. Extending beyond the foliage; few flowered.	Erect 20-29cm, scape relatively slender, usually arching, panicle branching at steep angles, loose + interrupted.
Flowers.		15-20mm wide, blue sepals spreading to slightly recurved.	large nodding, pale to deep blue-violet; strongly regularly recurved
Stamens	Anthers brown to black. filament swellings yellow	filament swellings yellow, shorter than yellow-brown anthers	6.5-9mm; filaments very pale yellow
Style			Whitish translucent 6mm.
Fruit	ovoid to globular 4-10mm long	Ovoid to globular 9-12mm long, blue.	Globular or obovoid, shiny off white to dark blue-purple.
Seeds	2-5 mm diam	3.00-3.5 mm diam.	Black, shiny, smooth. 3mm long by 2.5mm wide
Leaves (cont.)		Margins + midrib on lower surface rather distantly + irregularly serrate-scaberous.	

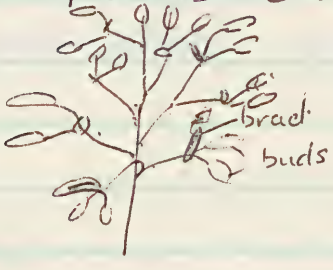
Dianella amoena Matted Flax-lily.

Character.	Dianella revoluta var revoluta	D. caerulea	D. amoena.
Height.	Tall 80cm	.5m	to 90 cm.
Habit.	Tufted clumps to 1m in diam	Forming sparse clumps.	extensive loose mats.
Leaves.	often glaucous Margins revolute. Midrib virtually to quite smooth.	Dark green. Usually widely spreading, often virtually prostrate lamina flat or margins somewhat recurved. 10-25cm long - See below	small, lamina narrow, linear-lanceolate to 4.3cm x 4-12mm wide thin broadly v-shaped or nearly flat, prominently keeled beneath along the midrib grey-green often marked dull crimson at base. loosely clasping, teeth to 0.5mm long
Leaf sheaths.	Commonly reddish	Closely folded + fused about midrib.	
Inflorescence.	Mostly exceeding foliage ovate to narrow conical in outline, peduncles > 15 cm long. Rather sparse.	Extending beyond the foliage; few flowered.	Erect 20-29cm, scape relatively slender, usually arching, panicle branching at steep angles, loose + interrupted.
Flowers.		15-20mm wide, blue sepals spreading to slightly recurved.	large nodding, pale to deep blue-violet, strongly regually recurved
Stamens	Anthers brown to black. filament swellings yellow	filament swellings yellow, shorter than yellow-brown anthers	6.5-9mm; filaments very pale yellow
Style			Whitish translucent 6mm.
Fruit	ovoid to globular 4-10mm long	Ovoid to globular 9-12mm long, blue.	Globular or obovoid, shiny off white to dark blue-purple.
Seeds	2-5mm diam	3.00-3.5 mm diam.	Black, shiny, smooth. 3mm long by 2.5mm wide
Leaves (cont.)		Margins + midrib on lower surface rather distantly + irregularly serrate-scaberous.	

Dianella caerulea — Paroo Lily

1980 Jan 14 Flowering along the railway line
Plant 1 ft high including flower — leaves app. 6" long V shaped sharply toothed on margins and keel. Teeth stick out ~~~~. leaves arranged in one plane and overlapping each other

Flowers definite blue - filament of stamens bright orange, but stamen pale yellow. ~~Some~~ Stamens longer than filament but only just
Flowers on branched stems at end of stalk.



brad at junctions. Two flowers at end of each branchlet. One of each pair opening first by quite a while as there are one twisted spent flower + one bud on many pairs. Flowers not in one plane but coming off main stem alternately
On flower stalk there are two bracts where stalk thickens, 1st brad 2½" long 2nd brad 1"

Plant had 4 green leaves + 2 spent leaves.
Identification by us.

1981 Nov 25th Plant growing in Habertouche leaves lax and with no recurved margin. Identified by J. Galbraith.

1993 Jan 30 Plants flowering at Combienbar camp 1 with fruit on them too.

1994 May 1. Plants growing in Austen's property near Darlamurla. Identified by Andrew Pagent.

2000 Dec 3rd Flowering in Sweetwater Ck. Reserve.

1994 Nov 1. Flowering at Casuarina Reserve at Fulham.
2004 Dec 27th " " in Newbarough bush.
" Dec 1. " " " Sandy Ck.
2006 Nov 4th " " Springsure area.

laevis

Dianella (Laevis) (longifolia var longifolia) (Smooth)

1966 Nov 27th Flowering Tgon Jth Reserve. leaves short hairy filaments twice as long as stamens with 3 ridges turned in a circle - Branched sepals grooved.

This specimen was Stypandra Caespitosa

I think D. laevis grows opp. O. Lades.

Muelleria Vol. 8 No: 3. May 1995 P. 365.

5 species of Dianella discussed here but only one may occur in this area. D. amoena

Flora of Victoria have 3 varieties of D. longifolia but only above variety ~~gro~~ is recorded for our area.

admixta + D. ssp. affrevoluta (s taxa)

Dianella Revoluta — Black-anthered Flax-lily

1966 Oct 30th Flowering opp. Mrs O. Lades.
Nov 13th Gormandale road. Seeds commencing to form.
1967 Oct 22nd Flowering along Clark's Rd.
Nov 25th " " Anderson's Track.
Dec 29th " " Erica Rd. Just starting to flower only a few flowers but lots of buds
1968 June 16th Flowering at base of tree near tennis court. Same tree as Acianthus exertus. Quite a few flowers.
Oct 27th Flowering along Call. Sth Rd.
Nov 10th " " Clarke's Rd.
1969 Jan 26 Berries on plants our bush Call. Rd
May 2nd " " " at South Cascade.
Nov 2nd Flowering at Briagolong.
1970 Jan 1st In berry at Anderson's Track
Oct 1. Flowering in new area Rosedale
11th " at Heyfield
Nov 25 " at Briagalong
1971 Oct 10th " " Rosedale
27th " at Reid's Corner.
1993 Jan 30 Errinundra.
1994 Nov 26 Flowering at APM block Stradbroke Sth. Gipp. Hway.
Nov 1 " " ~~Casuarina~~ Tigon Sth Reserve.
Oct 30 " " Dawson R'way Reserve
Nov 9th " " Licola weekend
1995 Jan 15 " on Dargo weekend.
Oct 28 " " Wonthaggi Heathlands.
Dec 12th " " Railway Reserve near Traralgon.
1999 Jan 23rd Recorded on Gelantipy weekend.
2000 Dec 3rd Flowering in Sweetwater Ck. Reserve.
2001 Aug 27th Growing in Newborough bush.
Dec 1 " " " " Sandy Ck.

2002 Nov 23rd Growing in Holey Plains State Park.

Dianella revoluta

Dianella revoluta is now either *Dianella admixta* or one of 7 other taxa all with the name *Dianella ssp. aff. revoluta* at present described by an area. These areas are Coastal, Cobberas, Crib Point, Genoa, Mallee, Montane and North-west Victoria. So it looks as if our species may be *D. admixta.* I have no further information on these divisions. However there is another species *Dianella brevicaulis* which used to be *Dianella revoluta var. brevicaulis* which is separated by the fact that while *D. revoluta* has brown to almost black anthers and flowers exceeding foliage and the peduncle greater then 15cm. with leaves often glaucous on lower surface, *D. brevicaulis* has flowers shorter than foliage, peduncle less then 15cm and leaves not glaucous on lower surface.

2006 Nov 4th Growing at ~~Seasers~~ ~~Fa~~ Springsure area.

Dianella Tasmanica

1966 Oct 29th Flowering in Rifle Range bush.
Dec 29th " at Darlamurla.
1969 April 29th Blue berries at South Cascade.
1969 May 2nd " " " "
Dec 15th Flowering at Jeeralang Rd.
1970 Jan 1st " along Hicela Rd. (saw edge to midrib as well as leaf margins.
Nov 25 Growing at Briagalong.
1971 Jan 30 Plants with berries some or mostly all green on Howitt Springs.
1972 Feb. Plants growing at Mt St. Gwinear
1976 Oct-Nov. Flowering opp. O. Ladies Specimen sent to Dr. Parsons
1993 Jan 30 Errinundra
1994 Apr 12th Drau in Water Reserve.
1995 Jan 15th Recorded on Dargo weekend.
1996 Dec " on Old Melb. Road near Latrobe Rd. Morwell.
1997 Jan 18th Growing along Livingstone Ck near Omeo,
Apr 5th " in APM Reserve - Grand Ridge Rd.
2001 Aug 27th " in Newbarrough bush
2002 Nov 23rd " " Haley Plains State Park
2006 Nov 4th " " Springsure area.

*

Dianthus armeria Deptford Pink

1992 Jan 25th Flowering near Mitta Mitta River at Parking Area on road to high country from Angler's Rest. Just like illustration in book on English wildflowers. Leaf arrangement like carnations. Petals marked like warts. Plant about 8" high.

Dichelachne crinita longhair Plumegrass.

1992 Aug. Growing in Rosedale Railway Reserve west of station.

Dense panicle with awns long & silky & covering lemmas so that they are not visible. Leaves flat, ligule even flat & entire. Culms jointed with dark markings at joints.

Dichondra repens (Kidney weed)

1968 Dec 22nd Flowering at Morwell Nat. Park Similar to wild violet leaves - grows in garden. Flowering tiny circular, white.
1969 Oct 18th Flowering at Rosedale.
1970 Sept 26th " among pines at Longford.
Oct 11th " at Heyfield
1972 July 22 Plant growing at Fairy Dell.
1993 Jan 31 " " on roadside between Club Terrace & Combienbar & in Errinundra N.P.
1994 Nov 26. Plants on RPM block Stradbroke Sth. Gipps. Hway.
Oct 28 Growing in Tigon Sth Reserve
Nov 1 " " Casuarina Reserve. Fulham.
Oct 30 " " Dowson Water Reserve.
" " " Hway "
1995 Apr 12th " " Drouin Water "
1995 Oct 15th Flowering along Clark's Rd.
Oct 25th " " Mt Heddrick.
1996 Jan 20th Recorded on Hotham weekend.
2001 Aug 25th " " Newborough bush

Dicksonia antarctica. — Soft Treefern

1966	Feb 27.	Bulga Park.
1967	Apr 30th	Morwell Nat' Park
1968	Feb 18th	Traralgon Creek Gully.
	Apr 7	Cook's Reserve
1970	Mch	Warrabah Bay.
	Oct 1	New Reserve Rosedale near creek
	Nov 23rd	Lily Pily Gully.
'972	July 16th	Tarra Valley
1993	Jan 31	Errinundra
1994	Apr 12th	Drouin Water Reserve.
1996	Aug 31st	Jindivick Land-care Area.
1997	Jan 18th	Livingstone Ck & Mt Nugong.
2000	Dec 3rd	Sweetwater Ck. Reserve.
2004	Apr 3	Colley's Rd Block - Small frond.

Digitaria ciliaris Summer Grass

1992 Feb. 23 Growing in our garden.
Ligule membranous & purple. Florets in pairs
Spikelets with ciliate frill & purple floret.
heaves broad & short on culm.

Not in census

Dillwynia hybrid.

1996 Nov 23rd Flowering on Old Port Trail in Noarlunga Coastal Park. Specimen identified by Neville Scarlett but specimen not satisfactory to send to herbarium.

Flowers like D. glaberrima but with penduncle only as long as leaves. Plant hairy.

Neville says it is a crossback as it is not exactly between parents – D. glaberrima and D. sericea.

Dillwynia Cinerascens (Grey)

1966 Sept 9th Flowering along Jeeralang Rd. Two varieties - one with leaves fine and over ½" long. Other variety had very small leaves but quite firm not soft as no. 1. Flowers were very similar although later variety had much more red in the flower.

1967 Sept 24 Flowering at Calligree. Sth Rd Turnoff. Flowers in terminal clusters, leaves ½" long not recurved at point, a ~~to~~ much branched shrub 1 to 2 feet high.

1968 Sept 28th Flowering near Dirson Downs.
Oct 6th - Calligree Sth. Rd.
29th - Home Bush

1969 Aug 24th " at Glengarry North. Leaves slightly recurved. Flowers terminal app. 8 in each cluster. Branches greyish. Calyx with very minute hairs to give grey appearance. Bushes about 2ft high. Leaves fairly densely along branches & very dark green about 15mm long.
Sept 4th Flowering at Wilson's Prom.

1975 Aug 30th " " Mullundung.

1982 Sept 5th Recorded with Dr. Parsons Giffard/Longford Rd at Bradleys Road X 10.

1994 Oct 30 Growing in Dawson R'way Reserve.

1996 Dec " Railway Reserve Conservation Reserve Traralgon.

1997 Oct 25th Flora of Victoria says the first division between this plant & D. sericea is that this plant has flowers in clusters of 3 or more terminal or axillary.

Dillwynia Glabberrima (Heathy Parrot Pea)

1966 Sept 4th Flowering Cochrane's Lane. Leaves cylindrical and recurved at the tips.
Nov 13th Flowering along Gormandale Rd.
1967 Jan 1st Still flowering along Clarke's Rd.
Aug 27th First flowers in A.P.M. Reserve
Oct 8th Still " " " "
Nov. 4th " " Wolfe's swamp.
1968 June 9th Flowering along Rosedale Rd not many flowers.
Oct 6th " in T'gon 5th Reserve.
Nov 3rd " Anderson's Track
1969 May 31st One or two flowers on plants in A.P.M. Res.
Oct 19th Flowering at Clarke's Road.
Nov 2nd " " Briagalong
1970 Mch 28th Just a few plants flowering along Chessum Road
May 20th Flowering along Firmin's Lane, Hazelwood. Leaves + flower very much smaller than usual but leaves still recurved at tips.
Sept 15th Flowering at T'gon 5th Reserve.
Oct 1. " in new area Rosedale
Oct 17th " at Briagalong.
1971 Oct 10th " at APM. Reserve.
23rd " " " "
25th " at Reid's Corner
1973 Sept 5th " at Diamond Hill - Bendigo
Here plants are shrubs 4ft high, flowers yellow leaves more closely to stem.
1978 Jan. ~~Extra~~ Recognition of species added. D. ramosissima (C. Beauglehole + R. Parsons)
1985 Sept. 14th Plants flowering in timber area at Dawson Railway Station. These plants had sessile groups of flowers axillary not terminal. Leaves grow out

past the last flower. Flowers not continuous along stem. but more crowded at intervals. Miss Galbraith mentions this type in her book as still being under D. glabberima. (Could this be Cliffs D. ramosissima?)

1979 Sept 10th Recorded with Dr. Parsons for X with flowers.
1994 Nov 26. Plant growing NPM dock Stradbroke Sth. Cupp. H'way.
Oct 28 " " in Tigon Sth Reserve flowering
Nov " " " Casuarina " Fulham flowering.
Oct 30 " " " Dawson R'way Reserve
1995 Nov 9 Flowering " " " " some low bushes with more red than usual + denser flowers. Also found usual form too. Cannot be D. ramosissima as Flora of NSW says the flowers are single in that species. Our specimen had flowers in 2s or 3s but then several stems to one section of plant
Oct 28 Flowering on Wonthaggi Heathlands
2001 Aug 27th Growing in Newborough bush.
2002 Nov 23rd " " Holey Plains State Park
2004 Apr 3 " " Colley's Rd Block

Dillwynia Hispida Red.

1966 Nov 27th Flowering along Clarke's Rd. Flowers very red, lovely colour, and cluster at end of long flower stalk.

1969 Oct 19th Flowering along Clarke's Rd.

Dillwynia juniperina Prickly Parrot-pea.

1989 Sept 16th flowering beside road on way down from Mt Elizabeth. Stiff spreading ~~shrub~~ leaves with pungent points with typical Parrot-pea yellow & red flowers. About 5 flowers to a cluster on ends of short branchlets.

1993 In Muelleria Vol 8/1 Apr 1993 description of D. juniperina & D. sieberi with key to distinguish them.

Small-leaf

Dillwynia (retorta) phylicoides Parrot-pea.

1969 Oct 4th Flowering past Glenmaggie on top of cutting with cryptandra amara. This is quite a robust plant with lovely large yellow + red flowers. The leaves are rolled back to make them appear cylindrical but they are twisted so that the line where the roll is almost complete goes round the leaf rather than straight down it.

1970 Oct 17th Flowering at Briagalong.

1973 Oct 28 " in Channel Country of Avon River.

1985 Nov 2nd Flowering on road to Tambaritha near where Grevillea lanigera grows. Identified by J. Galbraith.

1991 Oct 12th Flowering on Mt Hedrick

1994 Nov. 8th Flowering same place as 1985. leaves twisted.

Nov 9th " on Licola weekend.

1995 Oct 29th " at Insolvent Track at Boronia site.

Oct 12 In seed at Mt Heddrick with just 1 flower.

Dillwynia (Floribunda/Sericea sp.) (Showy)

1966 Sept 17th Flowering along Racecourse Rd Rosedale. The red-brown variety. Young shoots on some plants very woolly. Flowers stalkless.
Nov. 27th Still flowering along Clarks Rd.
1967 Aug 27th Flowering in A.P.M. reserve. only very few flowers yet. (This was probably D. Glaberrima)
Sept 9th Flowering along Cormandale Rd.
Oct 13th " at Haberfoucha.
1968 Sept 15th " along Cormandale Rd. Flowers are all up stem forming a long raceme.
Oct 29th Flowering in Home Bush
20th Flowering on Seninis Track. One plant all yellow with no red and not very far away a few plants the normal color.
Nov 1st Flowering Read Horse Gully
1969 Aug 16th " at Glengarry North. leaves very rigid - close to stem erect. Flowers from leafe bases, stalkless & therefore shorter than leaves. Arranged up the stem to form dense spike.
Sept 13th Flowering at Rosedale
Oct 12th Flowering in Tynong Area and flowers lovely orange red color, spikes densely covered with flowers.
Nov 2nd Flowering at Briagalong
1970 Aug 9th " " APM reserve
Sept 15th " " Tigon Mth Reserve.
Oct 1st " in new area Rosedale.
11th " at Heyfield
1971 Sept 2nd " Rose Gap area & McKenzie Falls area & others in Grampians.
Oct 10th Flowering near Cormandale. & Rosedale

1972 Aug 29th Flowering in the Cinnamons.
Plants very hairy - sufficiently so to make the stems white. Calyx tapering not obtuse + two top sepal connate more than half way but not truncate.
Standard with long claw.
leaves with pimples that hold hairs.

1973 Aug 8th Flowering on RPM to Tom's Bridge Rd.
1994 Nov 9th " on Licola weekend.
1995 Oct 28th " " Wonthaggi Heathlands
" 25th " " Mt Heddrick
Dec 12th " " Railway Reserve near Traralgon
1997 Oct 25th " at Laberlouche. Flora of Victoria says flowers are singly or paired in axils. This should make it easier to separate this species from D. cineraseens
2001 Aug 27th Recorded in Newborough bush
2002 Nov 13th " " Holey Plains State Park
2003 June Subsp. t. in 2nd ed. of Census for Southern Vic.
2006 Sept 30 Flowering at Serenis Track.
2006 July 7 " " Lang ~~Lang~~ Warrin - Ralph Habg.

Diplarrena moraea — Butterfly Flag

1969 Nov 8th Flowering at Wilson's Prom.
1973 June 23rd Plant growing at Darlamurla.
1994 May 1 " " " Austen's property near Darlamurla
2007 Sept 30 Flowering at Wonthaggi ~~Darlamurla~~ (Ralph)

nivis

Diplaspis (hydrocotyle) Snow Pennywort

1972 Jan 30th Plant in seed at Mt Howitt.
Water plant with basal leaves on long stalks.
12 leaves on specimen. Leaves hairy above with sparse long white rather rigid hairs or spikes with brown pointed tips. No hairs on underside of leaves. Hairs on stems of leaves but they are not rigid & appear to curve around.
Flower stalk with a very few widely spaced hairs, soft. Flower stalk about 6" long. Many flowers all joined at centre. Ovary like bellows with two flat sides & narrow indented edges
I think flowers are quite inconspicuous but were dried when I inspected the specimen. Plant rather succulent.

1996 Jan 20th Recorded on Hotham weekend in Village.
1997 " 18th Growing on Mt Nugong.

(Allantodia australis) Diplazium australe

(Athyrium australe) – Austral lady-fern

1968 Apr 9th Cook's Reserve

1969 Feb 9 " "

1970 Apr. 18th Glen Waverley

1993 Jan 31st Ferntree Gully

* Diplotaxis tenuifolia Sand Rocket-

2000 Apr 11th Growing at Heyfield WetLand. Noxious Weed.

Dipodium hamiltonianum Green Hyacinth Orchid

1999 Jan 23rd Flowering on Gelantipy weekend. Identified by James Turner.

Dipodium Punctatum (Hyacinth)

1967 Jan 1st Flowering in Traralgon South Reserve. Only one or two in flower but by 8th Jan they were flowering all over reserve.

May 25th Mrs. Dove gave us stem with 3 flowers at top of stalk but about 4 ins lower on stalk 2 perfectly formed & fully developed seed pods about 1¼" to 1½" long & over ½" wide - dark green. We have not seen so well developed pods on same stalk as flowers. Also flowers are very late. Seeds on stalks in Traralgon South reserve have already scattered their seeds. Season has been very dry - could this have any relation. We had over 1 inch of rain about 6 weeks earlier then very dry conditions ever since until last week when we had another inch. Plant growing at base of big tree.

Nov 4th Stalk coming up T'gon Sth Reserve + Wolfe's place

1968 Jan 12th Flowering in A.P.M. Bush.

Scape approx 3ft. 21 flowers

Dorsal Sepal; Lateral Sepals - lateral petals:
All 15 mm long pink with darker spots mainly towards the upper half. All curled back at tip to form semi-circle. 5mm at broadest part. Five segments arranged evenly leaving space opposite dorsal sepal.

Labellum: 13 mm long 7 mm at broadest part
Lateral lobes 5 mm long sitting up at right angles & hugging column so as not to be noticeable.
Mid lobe very darkly veined on dilated part. A diamond shape of pink hairs, densely spaced, Another diamond

of short white hairs between lateral lobes.
Margin of labellum entire. Dilated part dome shaped from underneath. giving very raised effect especially with hairs.

Column: 7 mm long tubular slightly pink at tip. at top. Right at end are pollen masses in a circular ball. Directly under ball is rostellum. Column under rostellum yellow. Column is at right angles to the petals & thus lies along the labellum. Very, very slightly lobed

Ovary: 1 cm long, brownish maroon & deeply grooved. Stem to main stalk 1.5 cm

Flower bracts: 1 to each flower brown pointed 7 mm long or longer

~~Leaf~~ - no leaf.

Flowers irregularly arranged on stalk.

Column viewed under microscope shows a hemispherical covering over the pollen masses. It appears to be attached on the far side from the stigma.

Jan 28th Flowering at Wolfe's Swamp
Mch 3: " opp. O. Lades.
1969 Jan 26th " our Bush.
Feb 23rd " opp O. Lades.
1970 Jan 2nd " at Tamboritha Saddle. These plants were much more dotted and darker in every way than the ones we are used to. Also the lateral sepals were not curled back & so gave the flower an elongated look.
Jan 12th Flowering in A.P.M. Reserve.
18th " at Anderson's Track.
" " on Bruthern Road.

This specimen will be D punctatum now 1996.

Dipodium punctatum (Cont)

1970	Feb 14th	Flowering in our Bush.
	Mch 9th	" in bush at Waratah Bay.
	Apr 25th	Petersons report flower in Cemetry at Inverlock (?)
	May 8th	Seed pods at Glengarry North.
	Nov 25.	Flowering at Briagalong.
1971	Jan 17th	" on Mt Useful road.
	Nov 12th	Plants just through the ground.
1972	May 15th	Flowering at Willung South.
1973	April 22nd	" " Tyson Sth
1990	Dec 18th	Lots of buds on Boodyarn Road 200 metres west of Grasstree Swamp Road.
1993	Feb 26th	Flowering in coastal bushland along track to Red Bluff beach Yanakie.
1995	Apr 12th	Seed still on plant at Drouin Water Reserve.
1996	Feb 20th	After visit to Ruth Clark by Ron Court we are convinced that the Hyacinth Orchids in our area are all D. roseum & that the one photographed at Tamboritha Saddle would be the only D. punctatum. Ron reports D. punctatum is growing somewhere near Lake Bongo at Lakes Entrance.
1996.	March 15th	After looking at our slides we think the only true D punctatum in them are numbers 1886 & ? & that the rest are what is now known as D. roseum. 1886/7 would be the ones photographed at Tamboritha Saddle ~~1996~~ 1970.
1996	Aug 3rd	Tyndirick. hand-eare area - only seeds so could not identify species.
1999	Jan 23rd	Flowering on Gielantipay weekend. Identified by James Turner.

Dipodium roseum

1992 Jan 25th Flowering on roadside between Angler's Rest and Buckeby Plain. Plants not blotchy like D. punctatum and not so many hairs on labellum. Colour a real rosy colour.

1993 Jan 31st Flowering on roadside in Errinundra area. Also flowering towards ~~Cann R~~ Club Terrace on side road on way home.

1995 Jan 15th Recorded on Omeo High Plains.

1996 Feb 20th Ran Court to see D. variegatum with Ruth Clarke. After this visit we are all convinced that the Dipodiums around here are all D. roseum & not D. punctatum

Jan 20th Flowering on Hotham weekend.

1999 Jan 23rd " " Cielanlipay weekend. Identified by James Turner.

2000 Dec 3rd In bud in Sweetwater Ck. Reserve.

2001 Aug 27th Recorded in Newborough bush.

2002 Nov 23rd " in Haley Plains State Park.

1996 In Muelleria Vol. 9 1996 article separating new species D. pardalinum (mostly in Western Vic) from D. roseum. Description & drawing.

Dipodium variegatum Variegated Hyacinth Orchid

1996 Feb 20th Ron Court & Keith Clark report this orchid growing in the Colquhun Forest near Lakes Entrance. Apparently James Turner has more than one patch of them. Ron photographed them.

Discaria pubescens - records not on forms

Stands 1 to 4 were seen by N.H. Scarlett in 1980-1984.

1) About 100 plants in Benambra Creek Cascades Natural Features & Scenic Reserve. Grid V50. First seen by A.C. Beauglehole.

2) About 10 plants in Nunniong Plains Natural Features & Scenic Reserve. Grid W6. First seen by A.C. Beauglehole.

3) Two plants in Wonnangatta-Moroka National Park on Mt. Dawson spur.

4) About 100 plants on private property on Bryce Plain. Grid S17. First seen by N.G. Walsh.

5&6) In April 1980, N.G. Walsh found two colonies (eight plants in all) in Cobberas-Tingaringy National Park. They are Berrima River (V53) and Cowambat Flat (V43).

7) About 10 plants on Limestone Creek, Cobberas-Tingaringy National Park. Grid V52. J. Yugovic 25 Ja 1984.

8) Two plants at intersection of Teapot Ck Track and Tambo River. State Forest. Grid V51. G.W. Carr 3 Ap 1986.

See also Lunt, I.D. 1987. The Australian Anchor Plant (*Discaria pubescens*): its distribution and status west of Melbourne, Victoria, Vict. Nat. (in the press) for some new western records.

Isolation of wga-binding proteins

- Harvested cells (slugs) were washed twice in 17 mM Sorensen phospate buffer pH 6.0, resuspended in 20 mM Tris-HCl (pH 7.8) and frozen ~~[illegible]~~
- After thawing the cells were washed twice with Tris-HCl (20 mM, pH 7.8) by spinning at 20'000 xg (??) with Tris-HCl
- Sediment was ~~[illegible]~~ well resuspended in 20 mM Tris-HCl (20 mM, pH 7.8) ~~[illegible]~~ containing 1% DOC (Deoxycholate), stirr for 40 Min at room temp (~20°C) (~2-10 mg Prot/ml)
- Spin down for 45 Min at 100'000 xg ~~[illegible]~~
- Take the clear supernatant and add 10 µl ~~[illegible]~~ 20 µl (thats enough for add of cells) wheat-germ-agglutinin-Sepharose 6 MB (Pharmacia)
- Shake gently at 4°C for several hours (overnight) (no stirrer to prevent braking the Sepharose beads)
- Collect the ~~[illegible]~~ wga-Sepharose beads
- wash 3 times each ~~[illegible]~~ 5 Min with:
  - 20 mM Tris-HCl (pH 7.8) 0.1% Triton X-100 and 1 M NaCl
  - 20 mM Tris-HCl (pH 7.8), 0.1% Triton X-100 or any detergent you like

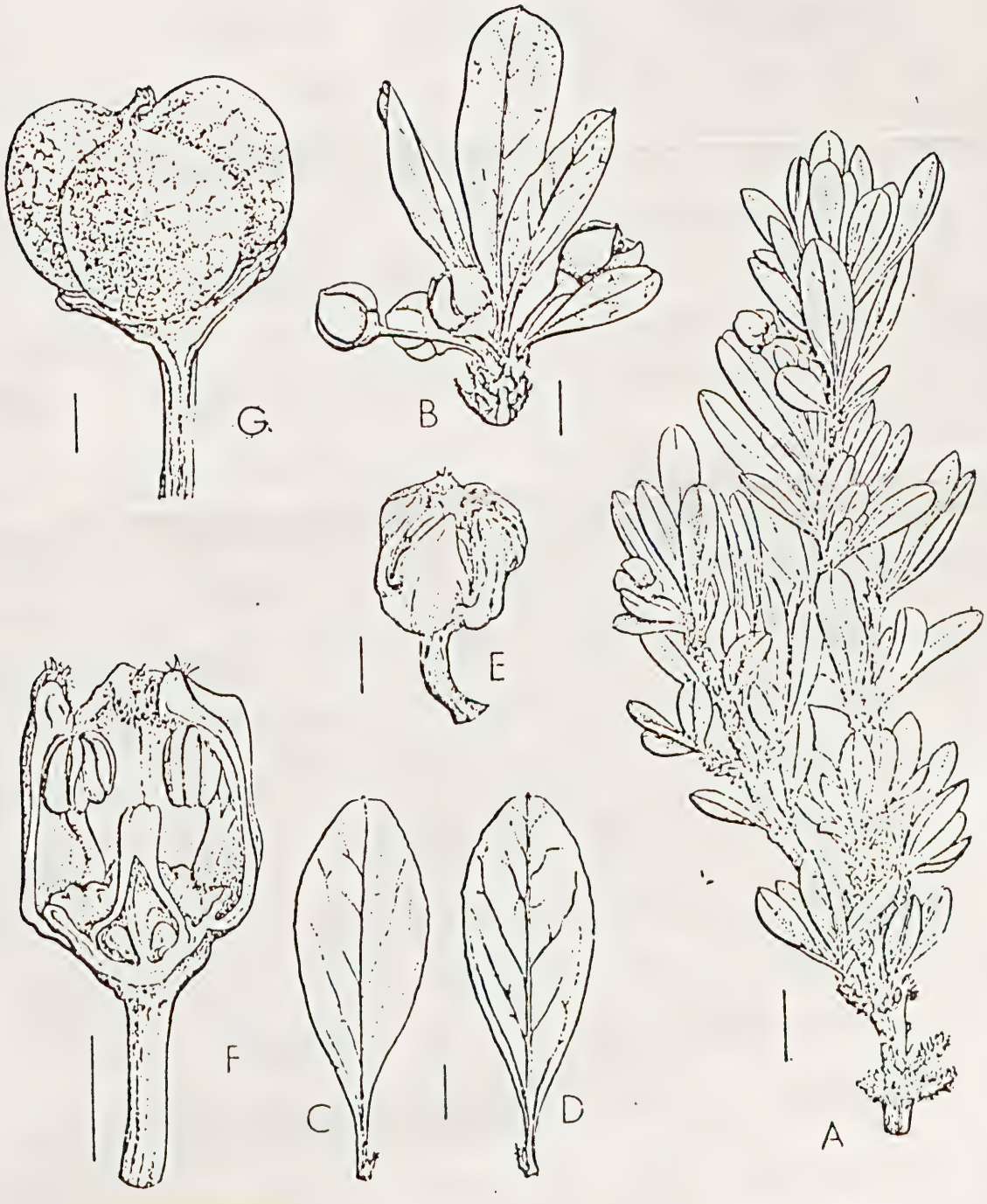


Fig. 1 — *Discaria nitida* Tort.: A, rama; B, detalle de un braquiblasto; C, hoja cara adaxial; D, hoja cara abaxial; E, flor en antesis; F, corte longitudinal de la flor (E); G, fruto. A-F de MEL 56204; G de NSW 183914. Escalas: en A: 1 cm.; en B-D: 2 mm.; en E-G: 1 mm. (*Del.* Alda V. de Valente).

KERRY HALL
Department of Botany
20·3·86

Unfortunately she does not tell you the very thing you want to know and that is where it grows!
I shall look up Cliff's records later
I have asked James! It is found at Cobungra + the Victoria River area

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Telex No. (AA) 33143

Dear Miss Clark, it was great to hear of your interest in the rare plant which I am studying for my Honours degree. I hope this information is of use to you.

The plant is called Discaria pubescens, common name: Australian Anchor Plant. There is also another species which I'm working on called Discaria nitida. D. pubescens is the more common of the two and since you frequent the area you have probably seen it in your travels a there are quite a few colonies in that area (Omeo).

Discaria is nowhere as 'good-looking' as any of your orchids would be. It is a spiny shrub which is not at all attractive and has a nasty 'bite' to it when the spines dig into your fingers. I have enclosed a photocopy of a sketch of it to give you an idea of what it looks like. It's height can range from ≈30cm to 3-4m tall, though I have seen no plants as large as this and most range in the area of 30-150 cm tall. The plant is very green and the spines predominate, The leaves are very small in relation to the spines and are deciduous.

Local areas of Omeo where Discaria pubescens has been found are Cobungra Station on the Victoria River and Spring Creek, also at Benambra on a hillside near the rubbish tip. The sites most accessible to you would be

1. On the banks of the Livingstone Ck., where there is one colony just north of the Holsta Tourist Park boundary fence and one other plant on the west bank.

2. On the east bank of Livingstone Ck., below the Omeo Highway.

3. South of the juncion of the Birregun and Upper Livingstone Rd., eastern creek bank above the Upper Livingstone Rd.

I have enclosed maps of these sites, which I hope you find useful. Happy Discaria hunting!

Yours Sincerely

— Kerry Hall.

P.S Cam Beardsell says hello and that he hasn't had a chance to drop in yet. (Cam has been helping me with my project).

Discaria — Anchor Plant.

1990 Jan 28th James Turner showed us this plant growing near the first car park area near division / track on ~~near commencement~~ of walk to ~~Bryces Gorge~~ Guy's hut + Bryce's Gorge

This plant had all the spines in the one plane. Spines opposite and at an angle of app. 45° to the branch. Plant looked like regrowth after being grazed. No cattle in the area - or at least very few, since CF+L bought land from Mr. Gilder.

Under the microscope the branch appears to have many whitish "glands". The branch is ribbed. (The 'glands" may be tiny sets of stellate hairs) Spine also ribbed with brown pungent point which looks like a cap.

Leaves:- There is one leaf at the base of each spine for most of the spines on our specimen; but the bottom two sets of spines but these may have broken off in obtaining the specimen.

The leaves are about 5mm long and 2-3mm wide with distinctly toothed margins - 4-5 teeth + the top point

The texture of the leaf is not smooth but rather finely ridged + reticulated.

The spines come at the top of each junction, then the reddish wavy stipules 1mm. and finally below both of these the stem of the leaf. The stem is app. 1mm long. The leaf only has one main vein hollowed down on the upper surface + ridged on the under surface. There were no fruits or buds.

Discaria pubescens Archer Plant.

1999 Jan 23rd Identified by James Turner on Gelantipay weekend.

crassifolium var. . Rounded Noonflower

Disphyma Australe . clavellatum (Pig-face)

1967 April 1st. Flowering in salt marsh at Lech Sport.
Pigface or moon flower.

1968 May 12th Flowering at Gellingdale.

1970 Apr 28th " at Screw Creek near Leongatha.

1971 Aug 22nd . at Lech Sport salt marshes. Not many flowers.

1978 Jan Synonymous with D. clavellatum. Chinnock N.Z. Journal of Botany 14: 77-78 (1976) [C. Beauglehole & R. Parsons]

In Census Ed. 3. D australe is now D crassifolium ssp clavellatum

1996 Oct 12th Growing at Paradise Beach near 2nd pipeline in N.P.

Nov 23rd Growing on Old Port Trial in Nooramunga Coastal Park. Ellen describes it as rooting at intervals, leaves fleshy, cylindrical or plano-convex. This is the coarser one with triangular leaves.

Distichlis distichophylla. Australian Salt-Grass

1993 Feb 26 Growing in salt marshes near Wilson's Prom.

1993 April 25 " at Port Albert in Nooramunga Reserve & in cemetry. Stiff grass with rigid leaves in one plane in two opp rows but leaves alternate. Every branch of leaves not in same direction so that whole section is not in one plane. Plant wiry and bright green with main stem straw coloured.

1996 Oct 12 Growing at Paradise Beach near 2nd pipeline in W.P.

Diuris chryseopsis (was D. lanceolata) Golden Moth.

2003 Sept 26 Flowering at Dawson Railway Reserve.
There were a great number of these flowers.
Flowers appeared small. The dorsal sepal was
bent forward - not erect - der lateral sepals not much
longer than flower - not conspicuous -. I did not get
down to see ridge on tongue but it came down
quite a way though not right to tip. lateral
lobes of labellum very small & jagged.
For difference between 2 species that were
D. lanceolata see under D. lanceolata.
The CD Wild Plants of Victoria says this
species grows in the lowlands while
D. monticola grows subalpine - has rounded
tips to the petals. whereas D chryseopsis has
pointed petals.

2006 Sept 29th Flowering at Dawson - Ralph Laby.

Diuris dendrobioides

2006 Dec 9th Ralph Laby says this is the diuris that flowers at Dawson. He says the one at Longford Road is D. punctata

orientis

Diuris (Longifolia)(corymbosa) (Wallflower)

1966 31st Oct. Flowering in our bush paddock also found a yellow variety with very little brown.

1967 2nd Oct Flowering ~~in~~ near Chester Pk.

22nd " " at Clark's Rd.

1968 Oct 5th " " A.P.M Reserve.

20th " " at Chester Park.

27th Mr Marshall reports seeing this orchid flowering in T'gon Sth Res.

Nov 10th Flowering Clarke's Rd

1969 Sept 4th " at Wilson's Prom.

Oct 18th " Rosedale

Nov 2nd " at Briagalong.

1971 Oct 21st " at Reid's Corner.

1995 Oct 28th " " Wonthaggi Heathlands.

1996 Dec Growing on Old Melb Rd near Latrobe Rd. Morwell.

2000 Name change to D. orientis in 6th ed. Census

2003 Oct 25th Flowering on Anzac Rd & Big Tower Rd. Mullungdung

2006 Sept 30 Flowering at Serenis Track. Also beautiful completely yellow specimens as well as usual.

DIURIS (PEDUNCULATA) lanceolata Edith Coleman 179 - 1932Dec

Pollen in neat bundles and mealy or waxy, ready for transport. With simple effortless action the insect carries off, usually attached to its head, in tidy compact bundles as Nature has packed them, the precious grains essential to the increase by seed of the plant. Small black bee.
All Diuris are so constructed as to preclude self-pollination. Rely only on insects. Flowers conspicuous. Slight perfume. Secrete no free nectar but around the top of the receptacle is a fleshy glandular ring which secretes a fluid apparently palatable to the small bees. To reach the nectar tissues, ring must be pierced by an insect having mouth-parts suitable for the purpose. Not sure, but possible, that a certain insect confines itself to one species or that only one species of bee is able to remove the pollen masses. Structure of flower is such that every part is adapted to the accomplishment of pollination. Labellum rigid and sessile. Base and wing-like labes embrace foot of column to form a small tubular opening leading into ovarial cavity. To reach glandular inner edge of receptacle insect mest exert pressure on labellum to widen the opening sufficiently to insert mouth-parts. Contracted lower margins of stigma extends into passage.

Dorsal sepal is almost erect, until pollination is effected - like open door. Bees may "read" this message. After pollination dorsal sepal falls.

Pollinea are not above stigma but are carried vertically behind erect stigmatic plate. Attached to large gland behind rostellum. Mature flower gland covered with covering film. When gland is pressed by head of insect, membrane ruptures and gland is quite free and becomes most tenacious and adheres firmly to insects head, when dry cannot easily be removed. Pollinea have no stems and apart from forward depression as glands contract on drying no change of position . Pollinea are deposited on stigma of another

flower, glands are rarely dislodged. One bee may piled up mass of glands without pollinea. Without pressure and rupture of membrane pollinea cannot be removed undamaged. Bees always enter at same angle, back legs grip firmly the ridges on base of labellum. 14 out of 15 bees captured males of one species with glands or pollinea. One female of different variety and no gland or pollinea on head.

either D chryscopsis or D. monticola

Golden Moth Orchid

Diuris (Pedunculata) lanceolata (Snake)

1966 Oct 8th Flowering near corner of Callignee Sth and Traralgon Sth roads.

Scape:- 12"

Dorsal Sepal:- Triangular, shorter + broader than L. Petals.

Lateral Petals:- Out to sides. Stems of lat. petals + back of flower striped.

" Sepals:- Not very long crossing over.

Labellum :- Centre lobe as big as dorsal petal, same shape. Towards centre of flower a further appendage, small and risen. Lateral lobes very tiny.

Column :- Out of sight. - sticky cup in centre of flower.

Leaf:- 6" long straplike.

1967 Sept 18th Mrs Fink reports many flowering beside railway line near Flynn

1968 Oct 13th Flowering along railway line at Flynn.

1970 Jan 2nd " at Tamboritha Saddle.

Sept 14th " along roadside on Longford road. Lovely big specimens.

1971 Aug 28th Flowering at Wild Flower Sanctuary and surrounding area at Stawell. Growing + flowering in profusion, plants with larger flowers which appeared more closed up but this could have been because there were showers all day.

1972 Jan 30th In seed at Mt Howitt.

1979 Sept 6 Recorded with Dr. Parsons for X Giffard Road.

1994 Oct 30 Flowering in Dawson R'way Reserve.

1996 Dec Recorded growing on Old. Melb. Rd. near Latrobe Rd. Morwell

2001 July 11th In Pictorial Guide to Wild Orchids of Victoria D. lanceolata is recorded as a Tasmanian species. Slides 4810/1, ~~4901~~ 683 look like D. chryscopsis with ridge half-way down the labellum. Slides 3351, 1901 + 1043 all appear to be like

Diuris behrii - Golden Cowslips; because of the ridge right down the labellum, lateral petals very spreading & dorsal sepal ± upright. lateral sepals ± equal to the length of the labellum.

2003 June Name change [illegible] D. chryseopsis [illegible]

2003 Sept. 27 Flowering at Dawson Reserve was D. chryseopsis

Diuris lanceolata

This species has now been divided with new species names.

Diuris chryseopsis has the ridge half way down the labellum while *Diuris monticola* has the ridge right down the labellum and lateral petals very spreading with dorsal sepal more or less upright.

Diuris (Maculata) pardina (Leopard)

1966 25 Sept. Flowering at Cowwar.
1967 1 Oct Flowering in T'gon Sth. Reserve
8th Oct " " A.P.M. "
1968 Oct 5th " " " "
1969 Oct 4th " " Cowwarr & Burgoin's Gap.
19th " " Clarke's Rd.
1973 Sept 2nd " " in profusion in the Bendigo district & Whipstick.
1994 Oct 30 Flowering in Dawson R'way Reserve
2006 Nov 16 " " Circamp - Murrabarklu

Diuris X Palachila

Broad-tip Diuris

1974 Oct 25: Flowering along Clark's Road near the Brown Beaks.

Flowers much smaller than usual local Diuris flowers.

Dorsal Sepal: very rounded. with tip turned forward slightly. Yellow with large brown dots.

Lateral Petals: Golden on front side, spotted at base & along margins on back, stem of petals green.

Lateral Sepals: At right angles to stem & ovary. Green & brown, not crossed in our specimen.

Labellum: Lateral lobes. - small toothed on upper edge - golden with brown markings. Central lobe - very broad at tip, edge fringed with brown, basal third with 2 ridges combining into one for other 2/3. Brown markings.

Leaf: About 1/3 to 1/2 length of stalk. & curled up rather tightly. About 4 leaves on specimen with two bracts.

Flower stalk divides about 2 - 2½" below flower with a brach on each branch but about 1" below flower.

1978 Jan. Hybrid D. maculata x D. pedunculata
D.L. Jones Orchadian 3(9). 104-106 (1970)
[C. Brumglehole .. R. Parsons]

~~1976 Oct 11th Recorded with Dr Parsons for S52.~~

Part	Punctata	Dendrobioides	Fragrantissima
Sepals	Upper ovate -20mm long, erect.	ovate -(17)10mm long erect	ovate -15mm long erect
	Lower to 60mm long pointing downwards & slightly divergent brown-green	to 90mm pointing (drooping) downwards & slightly divergent - green	to 60mm pointed downwards & usually parallel - green
Petals,	Elliptic to 25mm long erect & spreading. (recurved) more rounded.	(Petals tapering gradually into Claw) Elliptic to 18mm long. erect & spreading. (recurve) more oval in shape	Elliptic to 20mm long. erect & spreading. more rounded.
labellum.	to 15mm long, purple with white & yellow at the base, divided into 3 lobes, central lobe fan-shaped, folded pointed forwards with 2 central ridges, side lobes ovate, ± 4mm long, erect & spreading. ((Oct- Nov)) [ridges ending in tooth-like processes around midway & margins irregular]	to 12mm long, divided into 3 lobes, central lobe fan-shaped, pointed forwards with 2 central ridges, side lobes ovate, ± 3mm, erect or spreading. ((Nov Dec)) (obliquely reflexed with prominent purple stripes. Lateral lobes upcurved, margins irregular.)	to 12mm long, divided into 3 lobes, central lobe fan-shaped, pointed forwards, with two central ridges; side lobes ovate ± 3 mm long, erect & spreading. ((Oct- Nov.)) [ridges to near midway & margins entire].
Flowers	1-10 flowers to 50cm tall	1-6 flowers to 40cm tall	1-6 flowers. to 35cm tall.
Color	Pale purple. [often with darker markings]	White with pink markings (Pale lilac with few darker spots & streaks)	White with pink markings
Leaves.	to 25cm x 5mm, 1-3 mm at base of stem. [30 cm tall]	to 20cm x 5mm, 1-2 mm at base of stem. (40 cm tall)	to 15 cm x 5mm 2-3mm at base of stem [10cm long]

in
Flo of N.S.W.
] in
Flora of Vic.

Diuris punctata (Purple)

1969 Nov 2nd Flowering at Bricagalong.
Scape 15" up to 5 flowers
Dorsal Sepal: Wide ½" to ⅔" long.
Lateral Petals: On long stalks ½" long a petal 1" long purple.
Sepals: 2" long at least. Green curved upwards, almost tubular.
Labellum: Almost as big as dorsal sepal. with upraised ridge down centre. caused by folding labellum on stalk - stalk white with greenish yellow centre with red dots round centre.
lateral lobes sitting close to Dorsal sepal
Rostellum: white with two thin ears - pollen seems to be right down bottom.
Flower bract to each flower.
Ovary: ¼" long small for such a large flower.
Stem: Brownish green
leaves: app. 3' but end definitely withered at ⅔ of the way.

1974 Nov 8th (app.) Flowering at Dawson Railway Station.
1976 Oct 11th Recorded with Dr. Parsons S 52
Nov 11th " " T 17
'87 Oct 24th Great display of this orchid in Dawson Railway Reserve. Both sides of railway line.
Oct 31st One week later could only find about 30 flowers when there had been hundreds last week. Weather fairly hot
1991 Oct 25th Hundreds of flowers along Langford/Rosedale Rd where bitumen changes colour.
Nov 11th About 10 specimens flowering on unmade Road opp. Rosedale Golf Course about 1 Km down the

unmade road parallel to Lime Pit Road. Plants near Red Cairn tree + Melaleuca on western side of road.

1994 Oct 30 Flowering in Dawson R'way Reserve

Nov 5 " on Longford Road -

2004 Oct 26 " " " . Also found about 6 specimens of a white form. This is the 4th year the white forms have been reported but there have only been 1 or 2 in previous years.

Ralph Loby took photos of Pluris both at Dawson + Longford and he thinks they are different species. He thinks those at Dawson are D. sp. aff dendrobioides and those at Longford are D. punctata.

D dendrobioides is mentioned in Flora of Vic as predominately N.S.W. and differentiates it from D fragrantissima

D. sp. aff dendrobioides is mentioned as well as D dendrobioides

are both mentioned in the Census 2003.

2006 Dec 12 Flowering on Longford Road - Ralph Loby says plant at Dawson is D. dendrobioides.

2006 Oct 13 Flowering ~~Dawson~~ Longford.

Diuris Sulphurea (Tiger)

1966 Oct 9th Flowering in our paddock up near reserve.
Nov 17th " on our road near Plants.

Scape:- 42 cm. 7 flowers.
Dorsal Sepal:- Spear-shaped 1.5 cm with 2 big brown spots at base
Lateral Petals:- Claws brown 1 cm. Top 1.3 cm plain yellow.
" Sepals:- 2.2 cm green at tip + green vein down middle, brown with recurved edges. Crossing over each other. As the flowers age the lateral sepals straighten.
Labellum:- 3 lobed. mid lobe 1cm long lat. lobes 2 mm
Mid lobe brown spots at base + definite strip 1/3 from tip. Λ shape.
Column:- Yellow, ovate with green top.
Leaves:- 3 only, bottom two. 28 cm, 3rd leaf stem clasping 11 cm long. All with vein down middle.

1967 Nov 4th Flowering at Cowwarr
1969 Oct 12th " " Beaconsfield Upper.
18 " " Rosedale.
Nov 18th " " Cowwarr, very large specimens 2ft high with 5 flowers.
1970 Oct 17th Flowering at Briagalong
1971 Oct 24th " at Reids Corner
Nov 12th " " Flynn
13th " " Cowwarr.

1994 Nov 26th Flowering in RFM block Stradbroke Sth. Gipp. Hwy. Plants were 3'6" high - beautiful specimens.
Nov 9th Flowering on Licola weekend.
2002 Nov 23rd " - Holey Plains State Park

Dockrillia striolata
(Dendrobium striolatum) Streaked Rock orchid

1972 July 9th. Plants growing on rock faces at Billy Goat Bend up the gully to the left going down.

2002 June Name change in 2nd ed. of Census

Dodonaea. boronii folia

1991 Oct 12 In seed on Mt Hedelrick This is a very pretty plant with the usual dodonaea seed. The leaves are with 4-5 pairs of leaflets with a single leaflets at apex. Each leaflets have rounded indentation at apex

Dodonaea boroniifolia Hairy Hop-bush

1990 Oct 13 Plant growing at Mr Heddrick. Identified by James Turner.

1991 Oct 12 Ditto.

Dodonea (attenuata) ~~bursariifolia~~ ✓ slender ~~Small~~ Hop-bush

1969 Aug 29th Flowering at Granite Rock.
Identified by Miss Galbraith.

Dodonea (angustissima) viscosa ssp. angustissima

1971 Sept. Plant growing in Crampians with very immature seeds. Plant growing near Bellfield lookout. Leaves up to 2" long with a varnish-like look to the upper surface. also dark green. Under surface with oil spots or glands - very small. Midrib very prominent on under surface. Leaf entire. Branches ridged.

Dodonaea viscosa ssp. angustissima

Narrow-leaf Hop-bush

1990 Oct 13th Growing at Mt Heddrick. Identified by James Turner.

1995 Oct 25 " " "

viscosa ssp. cuneata

Dodonea (Cuneata) (Giant Hop Bush)

1969 Nov 5th Plant in seed at Stoney Creek. - seeds with round wing right around them. The seeds were green but Miss Galbraith says they will become colored.

1971 Aug 30th Plant with buds in the Grampians. Identified by Miss Galbraith as D. cuneata leaves ½" to 1" long, wedge-shaped with point at centre of flat end. leaf tapering in at the branch. leaf slightly toothed on the edges. Branches ridged. Buds with 3 leaf bracts. Buds reddish, app. 8 sections. Flowers terminal and on stalks.

1972 Aug 27th Plant in seed at Mt Arapiles.

1991 Oct 12th Plants in seed at Mt Hedrick.

australis

Doodia (media) Common Rasp Fern

1961	Apr. 30th	Morwell Nat. Park.
1970	Mch 7th	Warrabah Bay with fronds ~~2ft long~~ very robust.
1966	June	Ramrod Creek. very varied forms.
1995	Oct 25	Mt Heddrick also 1991 Oct. 13th.
1997	Jan 18th	Livingstone Ck near Omeo.
2003	June	Name change in 3rd ed. of Census

Doodia caudata — Small Rasp-fern

1972. July 9. Growing at Billy Goat Bend.
The pinules of the barren fronds broad, blunt & most attached to the rhachis (or stem) by midrib only. Sori close together and congested.

Drosera.

1983. Nov 25th Sent specimen to Dr. Parsons because it seemed different from D. peltata with red stems. Specimen came from 5 Km. S from junction of Gifford/Longford Road + Sale/Seaspray Road opp. A.P.M. prop. X 10. Neville Scarlett wrote back that it definitely seemed different + he may have to send it to W.A to the experts.

Drosera Arcturi (Alpine)

1967 Feb 6th Flowering at Erica amongst the sphagnum moss. Strap like leaves slightly thicker at top and rounded. Single flower on erect stalk.

1968 Jan 18th. Flowering at Baw Baw. Flower 4 petals white and bud dark - hairy.

1973 Jan 26th Flowering at Mt Baw Baw

1992 Jan 25th " " Buckety Plain & Bogong High Plains.

1994 Jan 16th Plant growing at Mt. St. Gwinear.

Drosera Binata (Forked)

1966 Oct 22 Found but not flowering at Anderson's Track.

1967 Jan 14th Plants in swamp area opp. Waterlily pond Yallourn Nth flowering but ones at Anderson's Track without even a sign of bud.

1967 ~~Oct~~ Nov 4th Plants in Wolfe's swamp.

1968 Jan 28th " " " - not in flower.

Oct 20th " at Seninis Track but not in flower.

1969 Jan 15 Flowering at Seninis Track.

1984 Nov. 10th Near the rubbish tip at Wilson's Prom we found many of these plants growing. Many of them had tiny beetles(?) on them. Beetles were green & red & did not seem to be affected by the sticky glands. Every so often they would run down the stem away from the glands & clean up. Do these bright coloured insects attract other insects to the plants.

1986 Oct. Mrs Jane Calder suggests instead of cleaning up insects may be covering themselves with a substance that resists sticky glands.

1988 Jan. Mr Walker, assistant Curator of Entomology, Museum Melbourne sent photostat from "Insects of Australia" CSIRO & identified above insects as true bugs ~~Cyg~~ Cyrtopeltis droserae or C. russelli.

I wrote two articles for LV Naturalist on subject May 1985 - May 1988.

1991 Jan 25th Recorded on Gelantipy weekend

~~1999~~ 2006 Feb 19 Flowering Wilsons Prom - Ralph Laby

Drosera Cilanduligera (Scarlet)

1970 Sept 26th Plants in bud. at Longford. These plants are small like Pygmea though the leaves are green perhaps tinged with red but still only ½" - 1" across the plant. There are no "hairs" at centre of rosette. Stalk rising from centre of rosette and having 4 buds on stalk. Plant we brought home is showing flower just through calya and is showing a vermillion color.

Oct 1. Plants in bud in new area Rosedale

1971 Sept 19th This plant is reported an annual but it has grown all the year in the bush house. It is putting up fresh growth now. Is it because of continual watering that it has continued to grow.

Oct 10th In bud at Rosedale - Chesham Rd.

1992 Sept 22nd Flowering on Walking track at Haley Hill.

1996 Nov 7th " " Gifford Rifle Range

Drosera (Panchonii) macrantha (Climbing)

1966 Sept 17th. Flowering along Racecourse Rd. Rosedale.
White flowers. leaves round & calyx at back of leaf quite deep cup shaped. Calyx of flower very noticeably hairy.

1968 Sept 28th. Plant found at Dutson Downs but not flowering.
Plants also found at Gellingdale 12.5.68.

1969 Aug 16th Flowering at Wilson's Prom.
Oct 4th " " Burgoin's Gap. Calyx very hairy.

1970 Aug 23rd " " Rosedale.
Sept 7th " " New Area, Rosedale.
Oct 1 " in " " "

1971 Aug 22nd Plants growing in Lakes National Park.
Oct 10th In bud at Rosedale

1972 Aug 23rd Flowering at Mt Arapiles

2006 July 23 Recorded at Long Warrin - Ralph Laby.

Drosera Peltata

1966 Sept 9th Flowering in Reserve Sunny day and lots of flowers. Sundew with basal leaves (?)

1967 Nov 4th Flowering Wolfe's swamp

1968 July 21st " at [illegible] Park.

Oct 20th " at Seninis Track with very hairy calyx. and basal leaves.

1970 Jan 25th Flowering at the Cobberas.

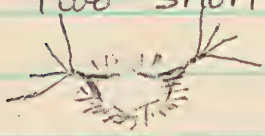
Sept 14th One or two flowers along roadside at Longford. Hairs on calyx very noticeable.

Oct 11th Flowering at Heyfield.

1972 Jan 30th Flowering at Mt Howitt.

1976 Sept Flowering along railway line reserve at Flynn.

1983 ~~Dec~~ 11th In bud along ~~Andersons~~ Seninis Track not far from main road on left-hand side of Track. Only a couple of basal leaves. Whole plant red instead of usual golden colour. Calyx hairy but not as dense as usual. Leaves seemed unusual to us. The two peaks have branches with two long and two shorter "hairs" all glandular.



Sent specimen to N. Scarlet.

1976 Oct 15th Recorded with Dr. Parsons. T16 & T17. & X10 1/11/78.

1994 Nov 1. Growing in Casuarina Reserve, Fulham.

Oct 30 " " Dawson R'way Reserve

1995 Dec 12 APM Block Stradbroke Lot 213a.

Nov 12 Collected on Railway Reserve near Traralgon

D

Drosera (Auriculata) peltata ssp auriculata. Sundew

1966 Aug 27th Fine specimens 1 ft high and many side ~~branches~~ stem leaves Flowering Callignee South Rd. near Barne's.

1967 Aug 13th Flowering along Callignee Sth Rd only occasional flower.

Sept 24 Flowering profusely

Oct 22nd " in A.P.M. Reserve

1968 Sept 15th " " Gormandale Reserve. Calyx of flower free from hairs: usually no basal leaves.

Oct 27th Flowering T'gon Sth Res

1969 Aug 24th " at Glengarry North

1970 Aug 23rd " at Gormandale.

Sept 14th " " Dutson Down Area.

Oct 1 " " new area Rosedale.

11th " " Heyfield

Nov 23rd " " Lily Pily Gully.

25 " " Briagalong

1971 Sept 19th " " Whitelaw's Track area.

Sept 3rd Plants growing throughout the Grampians but a very few with flowers.

Oct 10th Flowering at Rosedale

17th " at O. Lades.

24 " at Reids Corner with 6 flowers on top of stalk.

Nov 12th " " Flynn.

1975 Aug 30th " " Mullundung.

1994 Nov 26 Plants on APM. block Stradbroke Sth. Gipps. H'way.

~~Nov~~ Oct 25th Plants in T'gon Sth Reserve.

" 30 " " Dawson R'way Reserve.

1995 " 28th Flowering " Wonthaggi Heathlands.

Dec 12 " " Railway Reserve near Traralgon

2000 Dec 3 " " Sweetwater Ck. Reserve.

2001 Aug 27th " " Newborough bush.

2001 Dec 1 Flowering in Sandy Ck. Bush Newborough

Drosera Pygmaea. (Tiny)

1967 Feb 19th Found flowering on cleared area at Wolfe's property. Very tiny only ½" across. Leaves on very slender stalks in circle round centre. Clump of white whiskers (stipules) in centre. Tiny four-petalled white flower on very slender 1" long stem. Plant very deep red.

1969 Jan 9 Flowering ~~At~~ Senini's Track

16th In bud at Rosedale

March 30th Still finding this plant with flowers + buds. Found today along Callignee Road. Are we just more observant or is the plant more plentiful this year. Found earlier along Lime Pit Road Rosedale. Mr Lyndon reported seeing very tiny spider on plant (with use of magnifying glass). Said you could not see spider with naked eye.

1994 Nov 26 Plants on AMM block Stradbroke Sth. Gipp. Hway

1995 Oct 28 " " Wonthaggi Heathlands.

Drosera Spathulata.

1967 Jan 14th ~~Flowering~~ Growing near log opp. Waterlily pond. Yallourn Nth.
Miss Galbraith identified the plant.
Red bracts at bottom & pink flowers

1968 Oct 20th Plants found along Seninis Track.
Dec 29th " " " Road near Walhalla road.

1970 Jan 24th " " at Wilgulmerang.
Dec. Flowering at wet area on Chessum Rd.
Rosedale.

1976 Oct 15th Recorded with Dr. Parsons T18.

1995 Dec 12 APM. Block. Stradbroke

Drosera Whittakeri (Scented)

1966 Sept 9th Flowering Clark's Rd.
Saw approx. 50 flowers today. Have only seen one flower before. Was the day suitable or were we looking too late. Sweetly scented.

1967 Aug 6th Flowering along Callignee 5th Rd. Only about 6 flowers open but many buds on plants. Sunny day, very dry season.

Aug 13th Flowers almost open though day not very sunny.

Aug 20th Flowers open today although there were showers and much cloud, some periods of sunshine but weak.

Sept 24 Flowering along Clarkes Rd

1971 Aug 8th " at Whitelaw's Track T.S.
Many flowers on plants today.

Sept 19th Flowering at Whitelaw's Track.

Aug 29th " in the Grampians.

1972 Aug 27th " at Mt Arapiles + Little Desert.

1973 Aug 8th " on Rt 111 to Toms Bridge Rd.

2004 Nov 3 Growing in Newborough Bush.

Drymophila cyanocarpa Turquoise Berry.

1970 Nov 23 Plants growing among ferns along the track to hilly-Pilly Gully
Think this plant also grows at Parlemurla.

1994 Nov 9th Recorded for Wadbilliga weekend
1995 Jan 15th " " Dargo " "
1997 " 18th " " Mt. Wugong.

Dryopoa dives Giant Mountain Grass.

1994 Jan 16. Plant collected by James Turner near Essards Mill site Mt Erica. Identified by Herbarium staff. Plant in Willis as Festuca dives.

RMB 2260
Kalimna West 3909
4/6/94

Dear Bon,

Just a note to let you know the results on the gaint grass. Recently I finally got an answer from the Herbarium. Some time ago they re-determined my specimens from the Mt Baldhead area as an aberrant form of Dryopoa dives the gaint Mountain grass. The specimen from Mt Erica is the same. Cleff Beauglehole lists it as quite widespread in N.S.W. Somehow not as exciting as an obscure Russian grass, although it has to be better, because this makes it a native.

The Prostanthera specimen from Bindi area I mentioned is P. aff. rotundifolia. Neville Walsh and David Albrecht had collected specimens from that area.

Yes Muellenia was very interesting. There is usually something on specimens from the Gippsland area.

Thank you for your letter and information.

Sincere regards to yourself and Allie

James

P.T.O.

P. S

Last week we were all saddened at the passing of Mr Albert McDonald he was 90 you may remember him and his wife Rene who has also left us. The old ones are nearly all gone now

*

Echinochloa. crus-galli Common Barnyard Grass.

2000 12pr 11" Flowering in Heyfield WetHand.

* Ehrharta calycina. Perennial Veldt Grass

1992 Nov 10th Growing on Rosedale / Longford Rd.
Inflorescence without spathes. Spikelets awnless. 4 with 3 florets. Inflorescence loosely branched.

*

Ehrharta erecta. Panic Veldt grass

1992 Nov [?] Growing along Downies lane.
Inflorescence without spathe. Spikelet awnless.
Inflorescence branched x several (6) from one junction.
Head spreads at heat of day but closes in evening.
Spikelets one on top of another very close together.
Ligule 5mm entire.

1995 Nov 12 Collected on Railway Reserve near Traralgon.

Ehrharta longiflora. Annual Veldt-grass

2002 Nov 14 Flowering in Railway Reservoir Reserve, Tgon.

TLR/118/4mm.

Finadia hastata Saloop Saltbush.

1994 Oct 30 Growing in Dawson Water Reserve

1997 Sept 6 " on Moe Rail Trail.

2002 Apr 29 " in fruit at Heyfield Wetland.

(~~Rhagodia~~ nutans). Einadia nutans (Nodding Saltbush)

1967 Nov 5th Flowering at Stoney Creek. Hastate leaves, ring terminal flowers

1971 Jan 17th Flowering at Seaton.

1992 Apr 25th " at Nooramunga Coastal Reserve.

1993 Feb 26th Plants growing along coastal area at Red Bluff beach at Corner Inlet.

1994 Nov 1. Plants growing in Casuarina Reserve Fulham

Oct 30 " " " Dawson Water Reserve

" " " " " Ruey "

1995 Apr. 12th " " " Drouin Water "

1996 Nov 7th " " " Clifford Rifle Range.

2004 Oct 2nd " " " Heyfield Wetlands.

Elatine gratioloides Waterwort

1999 Oct 16" Growing at edge of Ponlac Wetland, Parnum. in very shallow water with roots hanging down — not sure if they reached the mud; but do not think so. Whole plant appeared to be floating on top of water to form a mat. leaves ovate to oblong 2-5mm long & 1-3mm wide. Book says flowers very small in axil of 1 leaf of any pair. leaves opp. Capsule is supposed to be 1·5–2·5mm wide but I couldn't decide if the little growth at leaf base was flower or fruit. In this case the stems were more or less 5" cm long. Illust. in Flora of Vic Vol. 3 P. 315.

2003 Apr 5 Growing in Traralgon Railway Reservoir Reserve. Tiny mat plant with tiny flowers & fruit. Growing in mud where water had receded. Good illustration in Helen Aston's book.

Elaeocarpus holopetalus Black Olive-berry

1991 Jan 26th Plant in fruit on Betts Creek Road off Tullock Rd Road near Gelantipy.

1993 Jan 30th Plants in fruit in Errinundra N.P.

1999 Jan 23rd Recorded on Gelantipy weekend.

reticulatus

Elaeocarpus (Cyaneus) (Blue Olive berry) or Blueberry Ash

1967 June 19th In berry in the reserve at Eden. Tree about 15ft high, not too many leaves, rather open tree. hds of blue berries, quite hard shade of blue plums, oval berry 1cm long 7mm wide stem about 4mm. leaves olive green, specimen blotchy with pimples but these probably due to insects, lanceolate approx 4.5 cm long 1.7 cm wide, edge finely toothed main rib or vein risen on both sides side veins also slightly risen. Flowers appear to be on separate stalk with many flowers on stalk (approx. 7 on specimen).

1972 July 22 Plant growing in Fairy Dell.

1983 Mullungdung growing near planted eucalypts plantation.

1970 Jan 4th. Details of flowers etc under Rapanea howittiana. Wrong identification by us.

1983 May. Berries on trees on Harrups Hiway in Mullungdung.

1984 Dec. 29th Trees flowering in Mullungdung. Some have been flowering for a while as very many white petals on ground. Some have just started flowering as no white underneath tree. Many trees of this plant in the area.

1990 Dec 15th Trees flowering beautifully in Mullungdung. Some trees had blue berries but do not know

if they are this years fruit. I think they are but Ollie doesn't agree.

.996 In Muelleria Vol 9 1996 Article on new species in coal at Yallourn.

Eleocharis acuta. Common Spike-rush

1995 Nov 12" Collected on Railway Reserve near Traralgon.

2002 Nov 30" " " Tsengaibbe Wetlands.

2003 Mch Recorded in Eel Hole Ck/Cemetery Conservation Reserve Management Plan.

Eleocharis gracilis Slender Spike-sedge

1996 Dec Growing Railway Reservoir Conservation Reserve, Traralgon.
2000 Apr " " Heyfield Wetland.

Eleocharis sphacelata Tall Spike-rush

1994 Nov 26 Plant in APM block Stradbroke Sth. Gipp. Hway,
Illust. in Helen Aston's book P. 201.
Stems cylindrical, unbranched, hollow with white tissue-like septa spaced along the length. Tapering into a small cylindrical inflorescence spike. Rings around scape. (We used to call this Eel Grass but that is the wrong name.)

Nov 1 - Collected specimen from Casuarina Reserve at Fulham.
Oct 30 " " " Dawson Water Reserve
1996 ~~Nov~~ Dec. " " on Traralgon Sth. Roadside.
Dec " " Railway Reservoir Conservation Reserve, Traralgon.
2000 Apr 11 " " Heyfield Wetland.

*

Eleusine tristachya — American Crowfoot Grass (or Goose-grass)

2002 Nov 30th Flowering at Toongabbie Wetlands.

Elymus scabrus. Common Wheatgrass.

1992 April 25 Growing at Port Albert cemetry.
Florets overlap each other with long awn. About
8 florets to each head + heads separated down
the culm. Awns terminal, scabrid, recurved at
maturity 3-4 cm long. Ligule very narrow with auricles.

1992 Aug. Growing in Rosedale Railway Reserve west
of station.

Empodisma minus — Spreading Rope-rush

1996 Dec — Growing on Traralgon Sth roadside.
1997 Jan 18th — " " Bentley's Plain. (Written up in Sedges Book)

Entolasia marginata Bordered Panic

1973 Mch 11 Plant growing in Willung Sth.

Name that Flower P. 159.

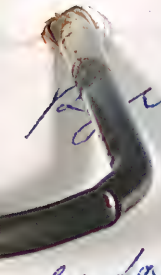
pseudo-whorled — pseudo - false

imbricate - overlapping each other especially in bud.

Adnate — fused to an organ of a different kind.

loculicidally - dehisces through the centres of loculi

dehiscent — breaking open at maturity to release contents.



pyrenes — the hard endocarp plus seed (the stone), usually of a fleshy fruit.

endocarp - the innermost layer of the wall of a fruit - in a drupe the stony layer surrounding the seed.

racemose an indeterminate inflorescence in which the main axis produces a series of flowers on lateral stalks.

Caducous
ducous falling off early.

valvate sepals & petals meet edge to edge but do not overlap.

filaments Po. 6 + 10 Name that flower or stalk of a stamen

anther ~~pollen bearing~~ ditto pollen bearing part of a stamen

pilose soft hairs.

bracteoles - small bract borne singly or in pairs on pedicle or calyx — (inside bract.) before sepal)

Differences in Genera

Epacris – leaves cuticulate style inserted in deep depression. Corolla tube persisting after flower opens. staminal filaments fixed to corolla Veins of leaves usually faint underneath

Sprengelia – style inserted leaves broad- stem clasping staminal filaments free. Flowers pink. Corolla persistant with very short tube, anthers hairy, leaves leaving no residual scars on stem

Leea – style inserted, leaves broad-stem clasping, filaments free. Flowers white. in leafless panicles, corolla falling unopened at flowering, anthers glabrous.

stamens fixed to corolla tube) style terminal)

Styphelia – anthers exserted (rest of genera not protruding beyond throat of tube.) leaves often discolorous branching subparallel palmate veins.

Astroloma – corolla bright red, yellow or greenish (rest of genera white or if ± coloured tube < 1 cm.) Leaves midvein only visible on underside or if several veins seen then some branched – no deep grooves. often discolorous.

Brachyloma – corolla lobes ± imbricate in bud tube 5 tufts of scales or descending hairs inside. (Corolla lobes valvate in bud for all other genera) Leaves discolorous. veins palmate.

Acrotriche – corolla-lobes bearded on tips with stiff reflexed hairs, tube swollen with nectar. (Flowers not greenish × bearding not confined to tips in other genera) Leaves discolorous, unbranched or branching sub-parallel veins.

Pentachondra × Dracophyllum – drupe crimson or purplish with 5-10 separable nutlets – low matted plants alpine

Pentachondra – flowers solitary × sessile – fruit crimson, leaves blunt slightly concave. Leaves mostly concolorous parallel veins

Dracophyllum – flowers several in short spikes, fruits purplish blue leaves flat. discolorous, branching sub-parallel veins.

Drupe with single stone for rest of genera.

Differences in Genera (cont)

Monotoca – drupe ~~unicell~~ unilocular corolla glabrous minute (± 2mm long), lobes more or less thickened at the tips. Leaves discolorous branching sub-parallel veins.

Ovary 2-5 locular - corolla often hairy inside.

Lissanthe – subtending bract & 2 bracteoles inserted at some distance from base of calyx; corolla pinkish hairy throat, glabrous lobes, drupe white or pink leaves pungent, upper half of bell hairy.

Now. subtending bract & bracteoles inserted immediately below calyx discolorous few parallel veins

Leucopogon – 1 floral bract 2 bracteoles strictly opposite, Corolla lobes densely bearded inside – (exception alpine L. montana glabrous). Leaves either, longitudinal veins.

Last two genera 1 floral bract, 3 bracteoles or more imbricate.

Melichrus – sepals 5-6mm long, obtuse, often coloured. corolla tube broad, shorter than calyx with 5 glandular scales inside. several parallel unbranched veins in leaves separated by deep grooves, discolorous.

Cyathodes – sepals 2mm long pointed, corolla-tube slightly longer than calyx, either glabrous or sparcely hairy inside (no scales) fruit fleshy cumson to pink Leaves pungent. usually discolorous unbranched sub-parallel palmate.

Structure

Heaths - heaths & heathers of northern Europe.
Very like Ericaceae of world-wide distribution but is poorly represented in Australia by only 4 or 5 small genera including Gaultheria (Wax-berry) (Baw Baw Berry) & the native Rhododendron of northern Vic. Baw Baw Berry on different family.
Wood Heath is ~~dominated by~~ applied to shrubs of varying height from ½ to 2 metres.
Epacridaceae is predominantly Australian with a few genera extending to ~~S~~ E. Asia, NZ. & the Pacific Islands.
In some books Epacridaceae are known as southern or Australian heaths as opposed to European heaths & heathers of Ericaceae. One species occurring in SW temperate S America.

Diagnostic features

Many Epacrids are light-demanding, growing in open habitats & are tolerant of poor acid soils.
Usually ½ to 2 m. tall, rarely small trees.
Leaves alternate or spirally arranged, sometimes overlapping organs or crowded at ends of shoots in more or less distinctly spaced pseudowhorls.
Leaves are protected from water loss in arid & dry environments; stiff, leathery, often pungent, entire or serrulate, sessile or petiolate.
Venation is ~~mostly~~ palmate V, rarely reticulate. - stipules absent. Jean says all but one have parallel veins.
Flowers
Small, regular, usually bisexual, occasionally polygamous or unisexual.
Borne on spikes or spikelike racemes, occasionally solitary; rarely in panicles & are bracteate. (2 or more bracteoles imbricate - overlapping)
Sepals 4 or 5 unfused, imbricate & persistant
Corolla tubular, campanulate to urceolate with 4-5 erect or more often spreading lobes. or Richea.
Stamens as many as corolla lobes, rarely fewer & alternate with them. Stamens inserted around base of ovary & free or attached to ~~ovary~~ corolla tube.
Anthers versatile - small attachment allowing easy movement - or rarely attached
Style is either terminal or inserted in a depression on the top of the ovary.
Ovary superior: ~~and~~ surrounded at base by disc glands (or nectary lobes)
Fruit a drupe or a capsule opening longitudinally.
Petals united.

Wittstienia — Until 1954 either Epacridaceae or Ericaceae although Census stayed with Epacridaceae 1984; ~~894~~ it was included in alseuosmiaceae Ovary inferior (or semi-inferior) Petals united many alternate.

Ericaceae Leathery, entire or almost entire leaves. Opposite leaves in St Africa.
Shrubs, lianes or rarely herbs.
Flowers either individually large or often showy terminal or axillary inflorescences
Petals always fused in Aust. species & are frequently large & brightly coloured.
Stamens twice as many as petals. (division in key is number of stamens in Willis & Flora)
Ovary superior or inferior.
Need acid conditions (both).

Watch For
General

Leaves petiolate or stem clasping, or sessile.
Staminal filaments free from corolla or fused to it.
Style inserted in or extended from ovary.
Single-flowered or 2 or 3.
Number of bracts & bracteoles & position from calyx base.
Shape of staminal filaments
Inner surface of corolla tube — glabrous or hairs.
Anthers exserted from corolla tube or enclosed.
& style longer or shorter than corolla tube.
Whether corolla lobes overlap or just meet.

Species.

Shape of leaves & hairs, etc. venation, size, margins.
Length of corolla tube in relation to calyx.
Position of flowers — one side of stem, terminal, axillary
Style hairy etc.
Length of sepals & shape — pointed etc

Epacridaceae in Slides

Wittateinia vacciniacea		BawBaw Berry 3288	
Richea continentis	Candle Heath	3011/2	Pl.26/.1
Epacris			Leaves articulate at base
" impressa	Common Heath	4790	PL.23/7 Corolla-tube several times as long as calyx & indentations
" obtusifolia	Blunt-leaf Hth.	3267	" " not exceeding calyx, flowers secund
" longi flora	Fuchsia Heath	1113	Pl.25/3 Not in Victoria.
Sprengelia incarnata	Swamp Heath	495	Pl.24/1 Corolla persistent with very short tube
Styphelia ascendens	Golden Heath	2307	Anthers exserted , corolla lobes densely hairy & revolute
Brachyloma			Corolla lobes imbricate, tufts of descending hairs in tube
" daphnoides	Daphne Heath	1702	Leaves very obtuse , not pungent. Tube much longer than pointed lobes , flowers without bracts.
" ericoides	Brush Heath	2231	Leaves ciliate margin, pungent; flowers with several bracts Corolla-tube sharply constricted beneath obtuse lobes.
Acrotriche			Flowers greenish, bearded only at the tips.
" serrulata & fruit	Honey-pots	4310 & 2376	Shrub, no adventitious roots, leaves spirally arranged Leaves with wide shallow grooves on under side.
" Prostrata	Trailing Ground -berry	886	Prostrate & trailing . Adventitious roots, leaves slightly recurved margins, calyx pilose
" affinis	Ridged G. B.		Shiny leaves
Pentachondra pumila	Carpet Heath	2791	Flowers solitary, fruit crimson, leaves slightly concave
Trochocarpa thymi folia	Coral Tr.	872	Semi-prostrate, ovate leaves, bluish purple fruit
" gunnii	Gunn's Tr.	1203	Tall shrub, leaves lance-shaped, fruit purple
Monotoca			Corollas minute, quite glabrous, lobes thickened at tips
" scorparia & fruit	Prickly Broom H.	1500 &1594	Veins longitudinal & parallel, pungent. 1-3 ft. high
" elliptica	Tree Broom H.	1651	Leaf apex mucronate, flowers in spikes, shrub tall.
Lissaanthe strigose	Peach Heath	3174	Subtending bract and 2 bracteoles some distance below calyx, leaves pungent
Melichrus urceolate & fruit	Urn Heath	2931 4397	Floral bract 1, bracteoles 3 or more, imbricate.
Cyathodes juniper	Crimson Berry	1653	Sepals pointed, corolla-tube longer than calyx.
Astroloma			Corolla bright red, yellow or greenish. Lobes hardly spreading
" humifusion	Cranberry H.	861	Pl. 25/2 1ft high, prostrate, c orolla glabrous externally
" conostephioides	Flame H.	2229	Pl.25/1 1-3ft.,bracts & bracteoles broad, red, clayx scarlet Corolla pubescent externally.
" pinifolium & C.U.	Pine H.	2629 1751	Pl.44/4 Leaves revolute, sepals pubescent, c orolla yellow
Leucopogon			Floral bracts1, bracteoles 2 strictly opposite, lobes densely Bearded inside.
" ericoides	Pink Beard H.	448 &449	Flowers clustered, leaves obtuse, mucronate, pubescent crowded, margins recurved.
" virgata	Common Beard H.	997	Flowers in short spikes, leaves at all angles, acuminate, 3 conspicuous parallel veins.
" parviflorus	Coast Beard H.	1545	Flowers densely arranged on spike. Shrub 5-12ft. high Coastal almost or quite glabrous.

Epacris brevi flora. Short-flowered Heath.

1970 Jan 24th Flowering at Wulgulmerang. Beautiful white heath with broadly spreading petals and long tubes slightly constricted before spreading. Bracts or sepals red tipped which show up against the white. Leaves lanceolate broadest at middle about ½" long with sharp point at apex. A lovely flower. Styles shorter than tubes.

1971 Jan 30th Flowering at Howitt Plains.

1973 Dec " " Mt Baw Baw

Muelleria Vol 5 No 3 1995 Pg There is an extra species now E. celata similar to E. brevi flora & E. petrophila. Also check Flora of Vic Vol. 3. Occurs at ~~Baw Baw~~ Snowy Range & Bogong High Plains to Cobungra & Mt Nujong.

The walk from Darby Saddle to Sparkes Lookout could be roughly divided into 3 zones. The first part was open enough to have lots of small flowering plants beside the path. The start at least had been burnt. The second part was forested, with big Stringybarks, treeferns, Clematis and Daisy bushes. The third area was fairly open again and had views out to sea from well above sea-level.

Early on a couple of interesting orchids were seen. *Thelymitra flexuosa*, Twisted SunOrchid, is named because of the bends in the stem. Its flowers are pale yellow, but rarely open except on a hot day. There was also a Honey Caladenia, *C. testacea*, a quite small-flowered Spider-orchid type.

As we came to the more forested area, a Crescent Honey-Eater was calling high above. There was also an attractive Correa with large red flowers and a little green at the tips. One Clematis plant was covering a very large area with masses of flowers. Another had climbed a burnt-out tree stump 7 metres high and sprung into leaf at the top. A *Pandorea pandorana* creeper was flowering quite freely too, but wasn't noticed until someone found a flower on the path and looked for the source.

From amongst the rocks at Sparkes Lookout there was a good view of the peninsula stretching onwards to Tongue Point, with waves breaking on the shores. Norman Island and the Glenny Group were visible as rocky outcrops to the south.

Near Sparkes Lookout was a group of Hare Orchids, which have very upright and slender maroon 'ears' rising from the pink flowers. This orchid often appears after fire but the fires hadn't reached there.

Over lunch, by Darby River, David Mules identified a pair of Marsh Harriers soaring over the lowlands to the east. Also an unusual black beetle, *Scaraphites rotundipennis*, was found and identified from a new book on Wilsons Promontory natural history. The body had two bulky, hard-surfaced sections, joined by a flexible waist.

Ron Carey

Sunday afternoon. After lunch at the Darby River car park we follow the main road north and turn right into Five Mile Road towards Millers Landing. Both sides of this dirt road are pretty flat and used as a firebreak. It's a good place for spotting kangaroos and emus. On the way we lose a few people as duties are calling them home. A cold wind is blowing and soon it starts to rain. We try to find protection under a big Banksia tree and feel like going home too. Fortunately it soon clears and the sun starts shining again. Our hiding place turns out to be a fantastic orchid spot. There are White Fingers, *Caladenia catanata* and Nodding Greenhoods, *Pterostylis nutans*. The orchid that is dominating the spot is already in seed. They probably are Mayfly or Mosquito orchids.

The committee did a great job in putting so much variety into this trip. After the rocky outcrops of Mount Oberon and Pillar Point and the Eucalypt woodland of Sparkes Lookout, the Banksia woodland (*Banksia serrata*) of Millers Landing on deep sandy soil offers a whole new range of plants. The bright colour of the Blue Stars, *Chamascilla corymbosa* stands out against the grey colours of Tassel Rope-rush, *Hypolaena fastigiata* and Wattle Mat-rush, *Lomandra filiformis*. This Lomandra sprecies has twisted leaves. We recognise the Common Aotus, *Aotus ericoides* again. The "dutch" lady from Leongatha asks me what the differences are between Aotus and Pultenea. I can't tell her so we get the books out and learn the flowers are very similar but Aotus differs in having neither stipules nor bracteoles.

Ken and Wendy call out. They have spotted a big snake a short distance from the path. The newly purchased Field guide comes in handy. Soon the snake is identified as the highly dangerous Eastern Tiger snake. Nobody volunteers to count its scales. We still need some further warning before we definitely stay on the path. A few hundred meters down the track some of us walk into a wetter area to have a closer look at the Paperbarks when I bump into another snake. I guess we saw the two common Paperbarks, Swamp Paperbark, *Melaleuca ericifolia* and the Scented Paperbark, *M. squarrosa*.

Epacridaceae in Slides

Epacris breviflora Short-flowered Heath.

1970 Jan 24th Flowering at Walgulmerang. Beautiful white heath with broadly spreading petals and long tubes slightly constricted before spreading. Bracts or sepals red tipped which show up against the white. Leaves lanceolate broadest at middle about ½" long with sharp point at apex. A lovely flower. Styles shorter than tubes.

1971 Jan 30th Flowering at Howitt Plains.

1973 Dec " " Mt Baw Baw

Wuellerstedia Vols No 3 1995 Pg There is an extra species now E. celata similar to E. breviflora & E. petrophila. Also check Flora of Vic Vol. 3. Circues at ~~Baw Baw~~ Snowy Range & Bogong High Plains to Cobungra & Mt Nujong.

Epacris celata. Cryptic Heath

2005 Jan 24 Members brought back specimen from the Errinundra weekend.
In Vol. 8 No 3 P. 319 Muelleria RK Crowden has described this species & separated it from ~~E. brevifolia~~ brevflora & E. petrophila to which it is similar but differs in several leaf characters. E. celata has rounded leaves (length to width ratio is 1.5, E petrophila 1.7 & E breviflora 1.8. It also has flatter leaves & a rather smooth conspicuous margin that is rarely serrulate. This species has a rounded, blunt apex or a rounded apex with a short mucro as an extension of the main vein.

LR/118/6mm.

Epacris gracilis Reddish Bog Heath

1997 Jan 19th Growing on Bentley's Plain.

This species was E. serpyllifolia in Willis

Epacris gunnii Gunn's Coral-heath

1999 Jan 23-4th Identified by James Turner on Cleland tipy weekend.

Epacris Impressa. Common Heath.

1967 Apr. 30th Flowers all along the spike. Especially the red heath.

May 28th Pink & white varieties flowering although not very long spikes. Miss Galbraith says red heath will grow in clay soil but all three grow in sandy soil, but red not as prolific as on clay.

1967 June 17th Flowering in East Gippsland
Around Eden the red variety is not as dark as further south but is a lovely salmon color. (Photo taken)
From Bairnsdale on the spikes of heath were much taller than locally. Spikes usually single. Is this because it is not eaten off by the animals or is it the climate that tends towards more luxuriant growth?

July 29th Still flowering everywhere.

Sept 24th " " "

Oct 8th All three colors flowering in A.P.M. Reserve

1968 Mch 31st First 2 flowers on pink heath.

June 9th Nice spikes of pink & red along Rosedale Rd.

30 Lovely spikes of red along Anderson's Track.

July 21st " " of all colors along near Chester [illegible]

Aug 24th Beautiful spikes of pink & white in A.P.M.

property past Cochrane's Turnoff in Cochrane's lane.
Mr Cuckolonie sent some down to Wildflower show.
1968 Oct 20th Still flowering in T'gon 3th Res.
1969 Jan 1st One flower on plant of White heath at Anderson's Track
May 18th Flowering at Willung South
Aug 9th " " Rosedale
16th Flowering at Wilson's Prom. There was one variety. the most beautiful shade of salmon pink. Deeper than that at Eden.
31st In A.P.M. property at end of Cochrane's lane the heath was absolutely beautiful All shades from white to deep red and standing 3 to 4ft high. Is this sight due to the ground being disturbed to plant pines?
1970 Mch 7th Flowering on heathlands near Walkerville.
28th Pink & White varieties flowering along Chessum Rd
Apr. 25th Beautiful spikes of pink & white heath at Venus Bay & on road there.
May 25th Flowering at Giormandale Reserve
July 25th " " Rintoul's Creek
Aug 9. " in A.P.M Reserve
22nd " in Giormandale.
29th " at Darlamurla.

Epacris Impressa. (cont)

1970 Sept 5th Flowering in new area at Rosedale
" 13th " at T'gon 5th. Reserve.
" 14 " " Dutson Down Road
Oct 1 " new area Rosedale
" 17th " at Lily Tilly Gully.
1971 June 6th " at Rosedale nearly all white.
" " in bush behind sheds, nearly all red, just a few pink flowers.
Aug 8th Flowering at Whitelaw's Track T.S. Also at bush among Pines behind property. Health is really beautiful this year. Is it because of lack of rain and the lovely sunny days despite the frosts. Spikes 4ft high. All colour.
Aug 29th Flowering at the Grampians. The colours are deep red, white, pink and a pretty rose pink colour too. I think the bells of all the colours are bigger than around here.
Oct 18th Flowering in RPM reserve " at Rosedale.
1972 Sept 10th " at Rosedale
1973 Aug 4th " " T'gon 5th
Aug 21st " " Boola Boola - White + Red
1978 May 7th " in Hdey Plains S.P. also flowering at Walkerville May 1st
1993 Jan 30 Plants growing in Errinundra N.P.
1993 Feb 26 Flowering along track to Red Bluff beach at Yanakie
1994 Nov 26 Plants in RPM block Stradbroke Sth. Gipp. it'way
Oct 28 " " T'gon Sth. Reserve. flowering.
1995 Nov 12 " " Railway Reserve near Traralgon.
2000 Dec 3rd " " Sweetwater Ck Reserve.
2004 Aug 27th Flowering in New-borough bush.
Dec 1 Growing " " " Sandy Ck

2004 Apr 3 Plants growing on Calley's Rd. Block

2005 In 'The Clematis' Winter 2005 Issue 64 Margaret Keegan writes from the 'Journal of the Sydney Museum' that the Cluid family EPACRIDACEAE including Epacris & Leucopogon has been placed in the middle of ERICACEAE. Epacridaceae members are now placed in a new sub-family STYPHELIOIDEAE within the family of Ericaceae.

2006 Sept 30th Flowering at Serenis Track

Nov 4th " " Springsure area.

Epacris lanuginosa Woolly.

1981 Dec 28 Plant in seed at swamp at Yallourn near pump station. Identified by J. Galbraith. Stems woolly and also style.

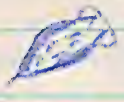
Epacris (Microphylla) (Coral)

1967 ~~Feb~~ Jan 14th Flowering at pond on Anderson's Track.
1968 Apr 15th Flowering at pond on Anderson's Track but have been flowering for some time as half stalk has finished flowering.
1968 June 9th Flowering along Lime Pit Rd. Rosedale. Just commencing to flower.
Nov 3rd Flowering Anderson's Track.
1969 May 18th " at Willung South.
1970 Jan 17th " along Seninis Track & Anderson's Track.
Jan 25th Flowering at Wild Dog Creek, Wulgulmerang. Only a few flowers in bloom.
1971 Jan 17th Flowering at Mt Useful. Quite shrubby bushes though not very high, not very many flowers. Flowers rather open with black anthers inside. Leaves very close to stem almost heart-shaped with an acute point, dark green and bent upwards at the margins.
1993 Jan 30 Plants flowering in Errinundra N.P.
1995 Jan 15" " " on Dargo weekend.
" Oct 28" " " " Wonthaggi Heathlands.
1996 Jan 20th " recorded " Hotham Weekend.
1997 " 19th " " " Bte Bentley's Plain.

Epacris obtusifolia Blunt-leaf

1969 Nov 25th. Flowering in swampy area opp pool. on Anderson's track.

1969 Oct 12th Flowering in swampy area in Emerald Tynong area. Cant remember exactly where we found it.
Flowers and leaves thick on stalk.
Leaves lanceolate with rounded apex, not at all pungent, slightly curled upwards, dark green.
Flowers one from each leaf base. Bell quite wide & rounded but constricted just before petals open out. Tips of petals roll back. Calyx consisting of three rows of bracts each bract tipped with reddish brown and final row about ⅔ way down bell.



Bells turning very brown as they become spent. In bud the bracts of the calyx completely cover bud.
I think it has a little perfume.

~~Oct~~ Oct Flowering in Cupsy Point Area.
1995 " 28 " " Wonthaggi Heathlands.

Epacris Paludosa (Swamp Health)

1967 Feb 6th Flowering Erica almost finished.

Nov 4th Just finished flowering Wolfe's swamp. This plant is Sprengelia incarnata. (Pink Swamp Heath)

1968 Jan 18th Flowering at Baw Baw. This plant had almost finished flowering and as flowers dried they became very constricted behind spreading petals, and appeared to dry from apex of tube to end of petals, rather than reverse. Not completely sure of identification

1970 Jan 24th Flowering at Wulgulmerang. Sure of identification as Miss Galbraith checked it. Beautiful white heath with broadly spreading petals and long tubes constricted before spreading. Bracts or sepals red tipped which show up against the white. Leaves lanceolate pointed at each end with sharp point about ½" long. A lovely flower.

Jan 1st Flowering at Tambontha Saddle.

1971 Jan 30 Plant finished flowering at Howitt Springs. Style slightly exceeds the tube. Bunches of flowers.

1973. Dec Flowering at Mt Baw Baw.

1992 Jan 26th " at Bogong High Plains

1994 Jan 16th " at Mt. Erica.

Epacris petrophila

1968 Jan 18th Flowering profusely at Baw Baw, Hope this is correctly identified as leaves were blunt but tiny. Flowers white with brown petals turned well back ?

1970 Jan 25th Flowering at Wild Dog Creek, Wulgulmerang.

1973 Dec " " Mt Baw Baw.

1976 Jan 20th " " Hotham Weekend.

Nuellenia Vol 8 No 3 1995 P.319. Another species E. celata similar to E. breviflora + E petrophila. See also Flora of Vic. Vol 3. Circues on Bogong High Plains, Snowy Range to Cobungra & Mt. Nujong.

Epilobium

1970 Jan 26th. How variety flowering on the road to Benambra. Plants limp & lying on ground creeping along with erect branches going upwards. Branches app. 6 cm high with small reddish flowers with seed pod only app 8mm long when in flower. Leaves 1 cm long with wavy edges with small teeth well apart. Leaves alternate right around the stem. Growing in very damp area.

Epilobium billardierianum ~~ballardieria~~ Robust Willow herb (~~Smooth~~)

1968 Dec 22nd Flowering Morwell National Park
1971 Jan 17th " at Springs near Mt Useful.
Jan 30 " " Howitt Springs
1973 Dec Plant growing at Mt Baw Baw.
1989 Mch. 18th Flowering on the Barrier between Tay's Backwater and the bay or inlet at Inverloch. This specimen was probably E. billardierianum ssp cinereum which was previously E. cinereum. Plant hoary-pubescent, leaves usually alternate but in this case they were crowded and small.
1994 Oct 30 Growing in Dawson R'way Reserve.
1996 Jan 20th Flowering on Hotham weekend
1995 Nov 12th " " Railway Reserve near Traralgon.
~~1997~~ 1997 Sept 6 Growing on Moe Rail Trail.

billardierianum ssp cinereum
(Cinereum)

Epilobium (Junceum) (Hairy Willow-herb)

1969 Jan 14th Flowering and seeds at Waterlily pond Yallourn Nth.
Feb 5th Also at Erica.
Nov 4th Flowering at Mr. Wolfe's place.
Dec 10th " LeRoy
1969 Feb 16th " Rosedale.
1970 Jan 1st " Nicola Rd.
24th " at Wulgulmerang.

See next page.

billardierianum ssp cinereum

Epilobium (cinereum) Variable Willow-herb.

1991 Jan 27th Flowering on Rocky Plain near Wulgulmerang. Plant deep reddish in colour. Tall about 2ft.

1992 Jan 25th Flowering on Bucketty Plain + up near Mt McKay past Falls Creek. Leaves alternate but not evenly spaced ½. Leaves toothed with tiny hairs on margins Stems quite hairy with short hairs.

1994 Jan 15th Flowering on Mt Erica

1995 Apr 12th Growing in Drouin Water Reserve

1994 Nov 9th " on Licola weekend

1995 Jan 15th " " Dargo "

1997 " 19th " " Bentley's Plain.

1999 " 23rd " " Gelantipy weekend. Identified from specimens brought back.

2003 Dec 6 Flowering near creek at Matherson Park, Churchill.

2005 Nov 12 " in garden on edge of footpath in Tulloch Way.

Epilobium curtisiae

1972 Jan 30. Flowering at Howitt Plains. Small epilobium with many leaves, serrated at edges. Flowers sessile. Leaves alternate. Flowers about 1/4" across with slightly wavy petals. No hairs on achene.

Epilobium gunnianum

1973	Dec.	Plant growing at Mt. Baw Baw.
1974	Jan 29th	" " " Buckety Plains.
1993	Jan 30	Plants flowering in Errinundra N.P.
1995	Jan 15th	" " on Bargo weekend.
1996	Jan 20th	" " " Hotham weekend
1997	" 18th	" " " Livingstone Ck near Orbost.
1991	" 26th	" " " Gelantipy Weekend
2003	Mch	Recorded in Eel Hole Ck/ Cemetery Conservation Reserve Management Plan.

Epilobium hirtigerum — Hairy Willow-herb.

1993 Mch 13th — Plant growing & flowering on Cridland's Rd just near gate round corner from Hendersons Rd Toongabbie. Plant about 2'6" high with greyish white appearance from hairy tomentum. leaves lanceolate to linear about ¼" wide with about 3 teeth on each margin. Leaves opposite and partially stem clasping. Flowers cream very tiny, calyx as long as petals or almost so. Fruits tending to purplish when maturing. Shrub much branched & fruits quite prolific

1994 Nov 1 — Growing in Casuarina Reserve Fulham.

1996 Dec — " " Railway Reservoir Conservation Reserve, Traralgon

Epilobium Pallidiflorum

1967 Feb 5th Flowering at Erica. Larger species with pale pink flowers.

1970 Jan 25th Flowering at the Cobberas.

~~Oct~~ Nov 23, " at Churchill. Dad reported.

1979 Nov 15th " Lyndon's Road Callignee.
Plant 4ft 6" high flowers purple pink.
leaves regularly toothed with small teeth.
Growing in table drain.

1993 Mch 27th Flowering in Mt Worth State Park. lovely specimen with deep colouring - lilac.

1994 Jan 15th Flowering on Mt Erica

1995 Apr 12th Growing in Drouin Water Reserve.

1991 Jan 25th " on Gelantipy weekend.

1999 " 23rd " " " "

1999 Oct 16th " . Bonlac Wetland, Darnum.

2003 Aug 3. Collected specimens at request of John Lawson to identify E. pallidiflorum for Railway Reserve Committee as A. Padjet identified it with VROT classification. Don't agree with that. Think our identification may be right even though there are no flowers at this time of year. Plants have leaves opposite at base of stems. + stems have curved hairs. leaves have sparse teeth on margins + are within prescribed measurement + correct shape of leaf base. Also plant branched mainly from the base (J. Galbraith's book). The whole plant, at this

time of year here, has a deep burgandy appearance which is not mentioned in any of the books. Plant collected in Railway Reservoir Reserve, Traralgon.

2005 Nov 10 Collected flowering specimen from Railway Reservoir Reserve at John Lawson's request. Plant keys out exactly to description in Flora of Victoria except that the flowers were not nodding at this stage. Mostly flowers only in bud & so perhaps they nod later. Certainly they were nodding before we got back to car but perhaps all Willowherbs do that. leaves were ~~alternate~~ opposite almost to top & within measurements suggested. Hairs were all curved with no long hairs at all; and they were all over the stems. Petals also within suggested measurements but couldn't measure flower open. The plants are now on both sides of the road & appear to be spreading down the drain.

Epilobium sarmentaceum — Mountain Willow-herb (Willis)
Nodding (Jean) "

1992 Jan 26th Flowering up near 1st stream where Celmisia sericophylla grows near Fall's Creek.
Pressed specimen has nodding head. leaves opp. with irregular teeth with nob on each tooth I think but not very distinct. Capsule long >4 cm with very fine hairs. Petals not much longer than sepals. Plant over 2ft high I think. Didn't have seeds to be absolutely sure of identification.

tasmanicum

Epilobium (Confertifolium.) (Willow Herb)

1968 Jan 18th Flowering at Baw Baw. Flowers pale mauve and leaves green not flowers pink & leaves red as I remember them from last time. Could perhaps be earlier in season or perhaps different variety.

Eragrostis brownii Common love-grass.

1994 May 1 Growing at Auden's property near Parkamurla.
Identified by Andrew Tagent.

Eremophila
(Myoporum) deserti

1913 Sept 4th Flowering in the Whipstick. Tree about 4' high with leaves about 1" long. Flowers cream bells hanging downwards on long stalks. Petals turned back like a piltosporum but bells smaller. Several flowers from same leaf base.

Eremophila gibbifolia Slender Emu-bush.

1972 Aug 28th Plant growing in the Little Desert.
leaves tiny - green - dark
Branches ~~white~~ grey
Can't find specimen of this species. but that bush was much branched with leaves with 'blister' or 'tubercles' on the underside giving leaf the appearance of being indented because tubercles extend past the edge of the leaf. Leaves erect almost parallel to stem.

glabra
Eremophila (maculata) Dwarf (Spotted) Emu Bush

1971 Sept 2 Plant growing in the Grampians at Flat Rock. Identified by Miss Galbraith. Only leaves, no buds or flowers. Leaves up to 4 cm long and app. 6 mm wide ending in small point but not pungent. Leaves many veined & slightly curled upwards from the sides. Branches hairy and deeply grooved. Leaves blackening as they dry.

1972 Aug 30 Plant growing in Flat Rock or Ciolton Gorge area. Because E. maculata is not recorded for this area & E. glabra is, I think above plants must be E. glabra.

Erigeron Pappochromus

Violet Fleabane (Daisy)

1967 Feb 6th Flowering at Erica (nicknamed 'it miserable daisy') very small - less than ½" across, basal leaves spoon-shaped. (~~Could be E. tasmanicus~~)

1968 Jan 18th Flowering at Baw Baw. Flowers from pale mauve to white. Flowering profusely.

1970 Jan 2nd Flowering at Tamboritha Saddle. Common name Violet Fleabane. Very small purple flowerhead.

1971 Jan 17th Flowering at Connors Plain Road near Mt Useful. Flower stalks about 1ft high, petals all rolled back - probably because of dull day. Leaves mostly basal with one leaf well up flower stalk. Leaves with stems and lobed or round-toothed. Flowers deep purple or white.

Jan 30th Flowering at Howitt Springs and on Mt Howitt Hike

1992 Jan 26th Flowering on Bogong High Plains

1993 Jan 30th " in marshy area in Errinundra N.P.

1994 Jan 15th " on Mt Erica.

See also page 2

1995 Muelleria 9 1996. Key to Erigeron pappacromus complex. Census of Victoria has 4 species from this complex and none of them are E. pappacromus now considered Tasmanian.

Erigeron pappocromus P.2. Violet Fleabane

1996 Jan 20th Recorded on Paw Paw Plain - Hotham weekend.

1997 " 15th " " Mt Baldhead.

Eriochilus Cucullatus. (Parsons Bands)

1966 Flowering Bush Road to Clarks Rd May.
Flowers vary from dark pink to white.
Found where soil was turned back for road making. Bush fly appeared to be pollenating the flowers. (See slide)

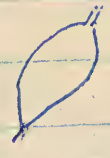
1967 April 6th. Flowering in bush paddock. also along Clark's Rd, 16th April.

Scape: 18 cm high, no stem bracts, can have 2 flowers on one scape.

Dorsal Sepal:- 7mm long 2mm wide at broadest part. Gradually widening as it comes up, when 1mm from tip suddenly becoming pointed. Faint slightly turned back. Red:

Lateral petals:- 5 mm long, very narrow, red with tiny green pointed tip. Positioned at about 45° angle from dorsal sepal.

lateral sepals:- 12mm long, 3-4 mm wide coming to a long pointed tip. White with edge slightly tinged with red. These two sepals are horizontal.



Ovary:- 8 mm long narrow, very lightly grooved. A brad at base of ovary 2 mm long. Ovary not stalked.

Column:- 5 mm high 2 mm wide with top corners turned forward to give hooded effect. Edge of column red, rest green, the corners coming in give the effect of red design on green column. Sticky part 1 cm wide, as long as column wide (2 mm). Pollen masses in two vertical bars above sticky tip.

labellum:- 8 mm by 4mm wide at widest part, last 3 mm curved right back until touching under side. Green strip down centre. White margins + red cali on margin right at tip. Margin broader

just before bend. labellum under magnification
The green is short green cali very thin. Red much
longer thin cali in groups to give the effect of thick cali.
Also white cali (short) ~~singly~~ singly among the red.
Leaf: 1½ cm slightly cupped, pointed lanceolate, dark green,
solitary.
When flower dies the lateral sepals turn upwards.

1968 Mch 30th Flowering in wildflower bed at Home.
Apr 14th " in bush rear our gravel pit area.
15th " in profusion at Anderson's Track.
Plants very short + colors from white to
deep pink.

1969 Mch 1st Flowering in bush behind Shingle Ck Res.
Mch 30th " near Prasophyllum Morrissii. Just
two flowers.
Apr 4th Flowering as above only quite a few
flowers but all white (no pink) + some
6" high.
Apr 27th Flowering in bush behind sandpit.
May 10th " along lime pit Rd Rosedale
1970 Jan 24th " at Rocky Plains, Wulgulmerang.
These plants were very pink.
Mch 28th Flowering in ~~Taralgon South~~ Girlmalindale Reserve.
Jan 30th Mr A. Morrison reports this orchid for
Mr Hewitt Weekend.

1972 Mch 21st Flowering above Waratah Bay
Jan 30th " at Mr Hewitt
May 25th " " Willung South.
1973 April 25th " Tgon Sth Whitelaws Track.
1978 May 7th Seed pods on plants in Holey Plains S.P.
1991 Jan 28th Recorded from Rocky Plain or Emu Plain on Gelantipy weekend
1999 Jan 23rd " on Gelantipy weekend.

Erodium

3-4-94

Flowering in house yard near gate near pinetree.

Cannot decide if moschatum or cicutarium

Small plant but could be because flowering early. & so cannot judge length of peduncle & pedicle

Distinguishing feature is put at base of cwn - does it have glandular hairs or not. Need more mature specimen

* Erodium moschatum Musky Heron's-bill
(Introduced species) or Musky Crow's-foot

1989 Oct 5 Flowering down near the fowl pen. Flowers regular, dark pink, several to a cluster on a long peduncle 4" long. Peduncle hairy with spreading hairs. leaves about 4" long on long hairy stalk; divided into app 9 leaflets, alternate with toothed margins. leaflets dark above, paler below, stalkless hairy beneath. Sprawling plant with very thick soft branches.
Seed pod with awn spiralling upwards from base. Seed pointed hairy + awn with large hairs from near seed. Flowers with musk-like perfume. On Farm.

1994 April 18 Flowering on the farm flats after the flood. Can see the fovea or pit if seed is pulled off main awn. Each seed has its own awn in groove on main awn. Definitely has musky smell of flowers. Glandular hairs in pit are very short but glands quite noticeable. This specimen was very large + main stem very thick + about 15" long. Flowers in clusters of up to 10 in a head but all stems joined at a central point. leaves consist of even side leaflet numbers with terminal leaflet consisting of a broader leaflet divided almost to the base into 3. leaflets toothed + alternate but almost opposite.

2002 Nov 14" Growing in Railway Reservoir Reserve, T'gon.